Author: Eric Spiering at WSC-PORTLAND
Date: 4/14/97 4:52 PM
Priority: Normal
TO: Michael Sutton
CC: Tom McCue
Subject: Caustic spill

---------- Message Contents ----------

Mike,

I went out and looked at the area and talked with Bart Ekhoff, who was on site during the incident. He showed me where the pipe failure occured and told me what he observed after the incident.

The fluid was spraying out of the containment area for approximately 15 minutes. An anion bed regeneration has flow of about 32 gpm. So the total fluid released from the pipe is approximately:
15min x 32 gpm = 480 gallons

I measured the area in two pieces: a triangle of approximately 20ft x 12ft, and a rectangle approx. 3ft x 18ft.

this gives an approximate area of:
120sqft + 54sqft = 174 sqft

assuming the water was an average depth of 1in:
174sqft x 1/12ft = 14.5 cft = 109 gallons.

Therefore: 109gal x 8.34bl/gal x 0.04 = 36lb NaOH

I think this estimate of water spilled to the ground, ~ 25% of the total release from the pipe(as estimated above), is plausible given the nature of the pipe failure and the position of the curtains and containment.

eric

870697

SCOEPA00018768

4/12/97 12:30 pm CAUSTIC SPILL FROM FAILED PIPE ON DISCHARGE SIDE OF CCD pump.
PHONE CALL FROM GARY KENT.

SPILL OCCURRED WHEN REGENERATING AN ANION BED.
CAUSTIC WASTEWATER WAS OBSERVED SPRAYING OUT OF ~~THE~~ AN OPENING IN THE CANVAS COVER SURROUNDING THE FAB1 FORWARDING SUMP.

GRAVEL AREA ~~WAS~~ 20 - 30 ft^2 WAS COVERED WITH 1 - 2 IN. OF WATER. DETERMINED TO BE pH < 12 AND 4% NaOH

$$30\ ft^2 \times \frac{2\ IN}{12\ IN/ft} \times 7.48\ GAL/ft^3 = 37.4\ GALS.$$

EST.

$$37.4\ GAL \times 8.34\ lbs/GAL \times 0.04 = \underline{12.48\ lbs\ NaOH}$$

12:45 pm CALLED OERS 1 800 452-0311
12:59 pm DEQ DUTY OFFICER HEATHER SCHIGF
RETURNED CALL PAGER# 237-5243
RQ FOR NaOH IS 1000 lbs
EXPECT FOLLOW UP CALL FROM DEQ MONDAY 4/14

Author: Gary Kent at WSC-PORTLAND
Date: 4/13/97 5:56 PM
Priority: Normal
TO: Tom McCue
CC: Justin Darr
CC: Kenneth Kemper
CC: Bart Ekhoff
Subject: CCD forwarding pump discharge line failure of 4/12/97

---------- Message Contents ----------

At 1045 am facilities operator Paul Marty notified facilities operator Bart Ekhoff during a Fab.1 Mixed Bed regeneration that he was switching regenerate waste drains from WAD to CCD. At 1100 am facilities operator Bart Ekhoff who was monitoring the WWTP, noticed that the CCD forwarding sump high alarm was active although the level in the sump was low. At that point operator Ekhoff requested operator Marty to investigate the CCD forwarding sump. Upon arrival at the CCD forwarding sump, operator Marty found a whitish liquid covering 30 to 40 sq. ft. of the gravel area in front of the forwarding sump. A whitish liquid was also in the driveway adjoining the forwarding sump area although none had entered the street or storm drain. Operator Marty then determined that the discharge line of the #1 CCD forwarding pump had broken and requested operator Ekhoff to shut off the CCD forwarding pumps from the WWTP control panel. Operator Marty then returned to the Fab.1 RODI area and switched regenerate drains back to WAD from CCD to eliminate any further waste from entering the CCD forwarding sump.

An ERT group was then assembled for cleanup and environmental manager Tom McCue was notified at home by phone. The affected area was then decon'ed and cordoned off as directed by Mr. McCue and the discharge line was repaired.

An estimated 200 gallons of waste liquid was spilled on the ground with another 400 gallons of waste liquid contained by the forwarding sump containment. The waste liquid is to believed to contain the chemicals - Sodium Hydroxide, Potassium Hydroxide and Hydrochloric Acid. The pH of the waste liquid was 12.An ERT incident report is also being forwarded to the addressee's.

Author: Gary Kent at WSC-PORTLAND
Date: 4/13/97 5:57 PM
Priority: Normal
TO: Tom McCue
TO: Justin Darr
TO: Kenneth Kemper
TO: Bart Ekhoff
Subject: ERT REPORT FORM

---------- Message Contents ----------

Forward Header

Subject: ERT REPORT FORM
Author: Kirk Benson at WSC-PORTLAND
Date: 11/21/96 3:49 PM

Date of Report:04/12/97

Date of Incident:04/12/97

Your Name:Paul Marty

Time: Start_11:00_____ Finish_14:00____

Location of incident:Fab 1 forwarding sump

ERT members involved:Myself,Allen Valerio,Brian Wolf,Marty Gideon,D Anntto,and Jonny Elarman

Other personnel involved:Gary Kent,and Bart Eckhoff,and Art Morales

Nature of incident:A discharge line off the CCD forwarding pump 1 broke.Approx. 200 gallons of caustic leak on to the ground.

For chemical spills/leaks

What was spilled/leaked:caustic liquid

Quantity spilled/leaked:approximately 200gallons,and 40 square feet

Clearance air sample results:none taken

Blood or body fluids involved: Y N (circle one)

Personal protective equipment used:boots,aprons,gloves,and face shield

ERT equipment used:pneumatic vaccum cleaner,and caustic neutralizer.

Health Unit supplies used:

Disposal of waste:caustic liquid

Comments:caustic liquid was neutralized with Kolorsafe,and vaccum. The liquid from the vaccum cleaner was dumped back into the forwarding sump containment.The containment pump then pumped it to WAD forwarding sump.

Wacker's Enviromental Engineer Manager,Tom McCUE was notifed.He asked that the contaminated area be marked off,and neutralized.That was done,as best we could.He also said he would assess the contaminated area monday.

Art Morales fixed the broken line.

[redacted] 11:30 4/12/97
GARY KENT
NaOH SPILL pH 12.0
MOST IN CONTAINMENT AREA
20-30 ft^2 GRAVEL WET
NEUTRALIZED SURFACE +
WET VACUUMED
CALLED ORES 12:45

1 (800) 452-0311

DEQ DUTY OFFICER
HEATHER SCHIFF
PAGER # 237-5243

{ED WILSON
MIKE GREENWOOD
WILL FOLLOW UP

$30\ ft^2 \times \frac{2''\ liq.}{12''/ft} \times 7.48\ gal/ft^3$

SPILL VOL. $\times\ 8.34\ lbs/gal \times 0.04[c]$

$= 12.48\ lbs\ NaOH$

February 29, 2000 ER-012: TM

Dr. Elliot J. Zais
Sr. Environmental Engineer
Water Quality Source Control
Department of Environmental Quality
2020 SW 4th Ave., Suite 400
Portland, OR 97201-4987

RE: Water Quality Inspection 2/15/00

Dear Dr. Zais:

In response to the questions you asked during the water quality inspection on February 15, 2000 this information was provided by our maintenance department.

1. The outfall temperature probe was re-calibrated. The temperature probe was checked by an instrumentation technician with a certified hand held temperature monitor and found to read +2 degree high. The probe was adjusted to match the certified meter. No drift or temperature fluctuation was observed during calibration.

2. The outfall flow meter at the waste water treatment plan was checked for electrical grounding by a qualified electrician. The meters for both outfalls were grounded at the meter and at the electrical panel feeding the meter. This is typical of instrumentation installations at Wacker Siltronic Corporation.

3. The preventative maintenance schedule for the outfall flow meters will take additional time to obtain due to a change over in the equipment numbering system and an updated version of the software.

Should you have any questions about this or any other item related to the inspection, please call me at 219-7532.

Sincerely,

Wacker Siltronic Corporation

SITE MAP &
OWW, CAD, WAD
DRAWINGS PROVIDED
TO INSPECTORS

Thomas C. McCue
Environmental Manager

Date: 2/18/00
Sender: Mike Iannantuano
To: Tom McCue
cc: Justin Darr, Kenneth Kemper, Tom Rothschild, Petra Hoy
Priority: Normal
Subject: Re:Fwd:Outfall Temperature Meter

Please see comments in red Mike

_____Reply Separator_____
Subject: Fwd:Outfall Temperature Meter
Author: Tom McCue
Date: 2/16/00 11:34 AM

My thanks to Tom Rothschild for following up on the temperature probe at the outfall. During the joint EPA-DEQ inspection yesterday there were three items we need to follow-up on. They include:

1. Calibrate the outfall temperature probe. Temperature drift was observed when we touched a clear 1/4 inch plastic tubing which seemed unrelated to the temperature probe. Temperature reading would increase 2-4 degrees by touching the plastic tubing. There was a question if a possible loose connection may exist for the probe. DEQ measured the temperature of the outfall with a certified portable meter which read 6-8 degrees lower (65.7 degrees vs our probe of 74 degrees) Richard checked the temperature probe with a calibrated hand held temperature monitor and the outfall probe as +2 degrees higher than the hand held instrument. No indication of temperature flucuation was observed when the tubing was moved and shaken.

2. Provide the PM schedule for the effluent flow meters (Mag-Meters) for the discharge of wastewater from the WWTP. These are the Combined Effluent meters measuring discharge volume to the river. We have not been able to find any equipment,STN or any other number associated with these meters and I will have to ask Emil if there are any PM's in the system just from a description.

3. Identify the method and location of grounding used for these flow meters.
The meters are grounded at the meter and at the electrical panel.

This information must be submitted to DEQ as follow-up from the inspection. Please provide me with the data as soon as it is available.

Thanks,

Tom McCue

_____Forward Header_____
Subject: Outfall Temperature Meter
Author: Tom Rothschild
Date: 2/16/00 10:46 AM

Tom,

I am working with Richard Nichols (Facilities Maintenance) and Steve Crane (Measurement and Standards) to determine what needs to be done to calibrate the Outfall Temperature Meter.

Tom R.

Date: 2/18/00
Sender: Kenneth Kemper
To: Tom McCue, Tim Kirk
Priority: Normal
Subject: Fwd:Re:Fwd:Re[3]:Fwd:Outfall Temperature Meter

Forward Header

Subject: Re:Fwd:Re[3]:Fwd:Outfall Temperature Meter
Author: Mike Iannantuano
Date: 2/18/00 11:41 AM

Another point to consider: a +/- 0.25 degrees we are not going to be able to acheive with the present probe and meter. Talking with Richard this was set up many years ago as a check not a true point of monitoring. If that is what we are going to do then lets get the proper equipment to meet this goal.

Mike

Reply Separator

Subject: Fwd:Re[3]:Fwd:Outfall Temperature Meter
Author: Kenneth Kemper
Date: 2/18/00 9:44 AM

Forward Header

Subject: Re[3]:Fwd:Outfall Temperature Meter
Author: Tim Kirk
Date: 2/18/00 9:23 AM

I will set the PM up but.....Is the calibration method (explained below) Tom R. and Richard used acceptable to DEQ (and everyone else) as long as we have +/-0.25 deg F? If not, I will need a calibration procedure.

Does DEQ recommend/require a specific time interval? If not I was thinking maybe monthly to start with.
Thanks!
Tim

Reply Separator

Subject: Re[2]:Fwd:Outfall Temperature Meter
Author: Kenneth Kemper
Date: 2/18/00 8:55 AM

We definitely need a PM. Tim, would you please initiate. Thank you.

Ken

Reply Separator

Subject: Re:Fwd:Outfall Temperature Meter
Author: Tom McCue
Date: 2/17/00 2:59 PM

Regulations require +/- 0.25 degrees F

Tom

Reply Separator

Subject: Fwd:Outfall Temperature Meter
Author: Tom Rothschild
Date: 2/17/00 2:52 PM

Richard N. did calibrate the Outfall Temperature meter this afternoon. He pulled it out of the manhole, cleaned it, and put it side-by-side with his portable certified meter. There was approximately a 2 F difference. He adjusted the on-line meter to more closely match his meter.

What +/- range should we aim for?

Tom R.

Forward Header

Subject: Outfall Temperature Meter
Author: Tom Rothschild
Date: 2/17/00 11:16 AM

Richard N. has a certified portable temperature meter in the shop.

The in-line probe could be calibrated against this certified meter.

How often would this calibration need to be done? Where would it be documented? Could it be put on a PM?

Tom R.

WACKER

Wacker Siltronic Corporation

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180
Phone (503) 243-2020
TDD (503) 241-7519

An ISO 9001 Certified Corporation

Thomas Rothschild
PO Box 83180 MS-20
Portland, OR 97283-0180
Phone: (503) 219-7374
Fax: (503) 417-4144

WACKER

FAX

To: SPEX Certiprep, Inc. **From:** Thomas Rothschild

Fax: 732-494-1747 **Phone:** 503-219-7374

Date: 12 September 2001 **Pages:** 11

Re: Discharge Monitoring Report, Quality Assurance Study 21

Comments:

PT Coordinator
CRM Division
203 Norcross Avenue
Metuchen, New Jersey 08840

STAPLE HERE

NPDES PERMITTEE DATA REPORT FORM

Form Approved. OMB No. 2080-0021 Approval Expires 9/30/2001

United States Environmental Protection Agency
Laboratory DMR-QA Evaluation Study 21
Laboratory Performance Evaluation
(These data are collected under the authority of the Federal Water Pollution Control Act.)

EPA USE ONLY: N 1 (1 2)

NPDES Permit Number: 101128 (3 4 5 6 7 8 9 10 11)

Permit Extension (12 13)

Current Permittee Mailing Address
7200 NW Front Avenue
Portland, Oregon 97210

NPDES Permit Number: 101128

Phone 503-243-2020

ATTENTION: **Follow the checklist** on next page for instructions on completing this form and submitting data for evaluation.

Enter Permittee Name as it Should Appear in Report Heading:

WACKER SILTRONIC CORPORATION (14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49)

For DMR-QA Study 20, conducted in 2000, the permittee

	YES	NO	
Received Samples:	X		50 51
Submitted Data:	X		52 53
Received a Report in Response:	X		54 55

Certification by Permit Holder or Authorized Representative

(as per 40 CFR Part 122.22 - see instructions.)

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. Each reported value was produced from a single analytical run using the analytical system that routinely performs these analyses to produce compliance monitoring data required under our National Pollutant Discharge Elimination System (NPDES) permit. Neither I nor any of my subordinates compared our results with results from independent analyses conducted by us or any other laboratory before we reported our results to the USEPA. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name and Title of Certifying Official (Type or Print)	Signature	Date Signed
Thomas J. Rothschild Facilities Chemist	Thomas J. Rothschild	12 Sep 2001

Address of Certifying Official (if different from Permittee address above.)	Telephone Number
Same	503-243-2020

SCOEPA00018779

United States Environmental Protection Agency
DMR-QA Study 21
Laboratory Performance Evaluation
(These data are collected under the authority of Federal Water Pollution Control Act.)

NPDES Permit Number: 1 0 1 1 2 8

Identification of All CHEM & TOX Laboratories who did Analysis for this Permit
Permit Number:

N	2
1	2

Name	Address	Labcode assigned by EPA	Lab Analysis (Put an 'X' in all that apply): Chem	Lab Analysis: Tox	Lab Type - chooose one: F = Federal, G = Local Gov., I = Industrial, S = State, C=Commercial, O = Other
Wacker Siltronic Corporation Facilities Operations Laboratory	7200 N.W. Front Avenue Portland, Oregon 97210	O R O 1 0 0 6 (3–9)	X (10)	(11)	I (12)
Coffey Laboratories Incorporated	12423 N.E. Whitaker Way Portland, Oregon 97230	O R O 0 0 1 1 (13–19)	X (20)	(21)	C (22)
		(23–29)	(30)	(31)	(32)
		(33–39)	(40)	(41)	(42)

Continued on the next page

SCOEPA00018780

Discharge Monitoring Report - Quality Assurance Proficiency Testing Study

STUDY #: ***DMRQA21***

STUDY TYPE: ***DMRQACHEM***

Duration: 06/18/01 - 09/14/01

MAIL OR FAX COMPLETED REPORT TO:

SPEX Certiprep, Inc.
PT Coordinator
CRM Division
203 Norcross Ave.
Metuchen, NJ 08840
FAX: 732-494-1747

PERMITTEES: SPEX CERTIPREP MUST RECEIVE YOUR COMPLETED REPORTS BY MIDNIGHT EST ON *09/14/01*

COMMERCIAL LABORATORIES: YOUR PERMITTEES MUST RECEIVE YOUR COMPLETED FORMS BY *8/29/01*

REPORT APPROVED BY:
(Laboratory Official)

OR01006 (Required - Enter corrections below)

EPA LAB ID: O R 0 1 0 0 6

Name: Thomas J. Rothschild
Title: Facilities Chemist
Address: Wacker Siltronic Corporation
7200 NW Front Avenue
Portland, Oregon 97210
Phone #: 503-243-2020
Fax #: 503-417-4144

Signature: Thomas J. Rothschild
Date: 10 Sep 2001

REPORT APPROVED BY:
(Permittee Official)
(Unless otherwise specified, the Performance Report will be sent to the person indicated below)

OR0030589 (Required - Enter corrections below)

PERMITTEE #: O R 0 0 3 0 5 8 9

Extension (if applicable)

Name: Thomas J. Rothschild
Title: Facilities Chemist
Address: Wacker Siltronic Corporation
7200 NW Front Avenue
Portland, Oregon 97210
Phone #: 503-243-2020
Fax #: 503-417-4144

Signature: Thomas J. Rothschild
Date: 10 Sep 2001

PLEASE FILL IN THE FOLLOWING INFORMATION REGARDING THE AGENCY TO WHICH YOUR REPORT SHOULD BE SENT:

Contact Name: Judy Johndohl
Agency: Oregon DEQ
Address: Executive Building
811 SW Sixth Avenue
Portland, Oregon 97204

Phone #: 503-229-6896
Fax #:

PLEASE TREAT EACH PT STUDY SAMPLE THE SAME WAY YOU WOULD TREAT A ROUTINE SAMPLE.

DO NOT REVEAL RESULTS OR ANY OTHER ASPECT OF THIS TEST TO ANY PERSON OR OTHER LABORATORY UNTIL THE TEST ROUND IS CONCLUDED.

SPEX CertiPrep and Protocol Analytical Supplies confirm that this PT Program complies with NIST Handbook 150: NVLAP Procedures and General Requirements and with NIST Handbook 150-19: Chemical Calibration – Providers of Proficiency Testing.
PT materials and PT studies have been developed using the criteria in National Standards for Water Proficiency Testing Studies Criteria Document, USEPA dated December 1998.

No claims against SPEX CERTIPREP, Inc. of any kind whatsoever, whether based on breach of warranty, alleged negligence, or otherwise, with respect to this product shall be greater in amount than the purchase price of the product in respect of which damages are claimed, and in no event shall SPEX CERTIPREP, Inc. be liable for any loss of profits or any incidental, special or consequential damages.

SO#: 73201 *CID:* 110180*1

NVLAP Lab Code: 200392-0

SPEX CERTIPREP, INC. 203 NORCROSS AVENUE METUCHEN, NJ 08840 732-549-7144 1-800-LAB-SPEX FAX:732-494-1747 www.SPEXCSP.COM

ISO 9001 CERTIFIED

SCOEPA00018781

Discharge Monitoring Report - Quality Assurance Proficiency Testing Study

SPEX CertiPrep

Data Reporting Sheet

STUDY #: *DMROA21*

STUDY TYPE: *DMRQACHEM*

Starting Date: 06/18/01 ***Closing Date:*** 09/14/01

MINERALS

Catalog Number: PTSPEX-MIN-WP

Wacker Siltronic Corp.

7200 NW Front Ave.

Portland *OR* *97210*

Sales Order: 73201

Customer #: 110180*1

Lot #: 12-41M12-42M

OR01006 (Required - Enter corrections below)

EPA Lab Id #: 0 R 0 1 0 0 6

OR0030589 (Required - Enter corrections below)

Permittee #: 0 R 0 0 3 0 5 8 9

Extension (if applicable)

Analyte	Analyte Code	VAF'	Method Code	Method Description	</>	Concentration	Units	Date of Analysis (mm/dd/yy)
ALKALINITY(TOTAL)	0027	X				.	MILLIGRAMS/L	/ /
CALCIUM	0023	X				.	MILLIGRAMS/L	/ /
Cl	0028	X				.	MILLIGRAMS/L	/ /
F	0029	X		SM4500-F C 20ED		0.581	MILLIGRAMS/L	09/04/01
HARDNESS(CaCo3)	0022	X				.	MILLIGRAMS/L	/ /
K	0026	X				.	MILLIGRAMS/L	/ /
MAGNESIUM	0024	X				.	MILLIGRAMS/L	/ /
Na	0025	X				.	MILLIGRAMS/L	/ /
SP. COND.*	0020	X				.	UMHOS/CM@25C	/ /
SULFATE	0030	X				.	MILLIGRAMS/L	/ /
TDS*	0021	X				.	MILLIGRAMS/L	/ /

Please report the result on the diluted sample to three significant figures in mg/L; for conductivity report in umhos/cm@ 25C.

' : Voluntary Analyte Flag -- Analytes marked with an "X" are voluntary for the DMRQA Study.

Authorized Signature: Thomas J. Rothschild ***Date:*** 7 Sep 2001

IMPORTANT: Permittees: SPEX CertiPrep must receive your completed form no later than 09/14/01

IMPORTANT: Commercial Laboratories: Your Permittee must receive your completed forms no later than 8/29/01

SCOEPA00018782

NVLAP Lab Code: 200392-0

SPEX CERTIPREP, INC. 203 NORCROSS AVENUE METUCHEN, NJ 08840 732-549-7144 1-800-LAB-SPEX FAX:732-494-1747 www.SPEXCSP.COM

ISO 9001 CERTIFIED

Discharge Monitoring Report - Quality Assurance Proficiency Testing Study

Data Reporting Sheet

STUDY #: ***DMRQA21***

STUDY TYPE: ***DMRQACHEM***

Starting Date: 06/18/01 ***Closing Date:*** 09/14/01

RESIDUES

Catalog Number: PTSPEX-RES-WP

Wacker Siltronic Corp.

7200 NW Front Ave.

Portland *OR* *97210*

Sales Order: 73201

Customer #: 110180*1

Lot #: 12-63RES-PT

OR01006 (Required - Enter corrections below)

EPA Lab Id #: O R 0 1 0 0 6

OR0030589 (Required - Enter corrections below)

Permittee #: O R 0 0 3 0 5 8 9

Extension (if applicable)

Analyte	*Analyte Code*	*VAF'*	*Method Code*	*Method Description*	*</>*	*Concentration*	*Units*	*Date of Analysis (mm/dd/yy)*
NFR	0072			SM2540D 20ED		85.2	MILLIGRAMS/L	09/04/01

Please report the result on the diluted sample to three significant figures in mg/L, based on 0.5 grams of sample weight.

' : Voluntary Analyte Flag -- Analytes marked with an "X" are voluntary for the DMRQA Study.

Authorized Signature: Thomas J. Rothschild ***Date:*** 7 Sep 2001

IMPORTANT: Permittees: SPEX CertiPrep must receive your completed form no later than 09/14/01

IMPORTANT: Commercial Laboratories: Your Permittee must receive your completed forms no later than 8/29/01

SCOEPA00018783

Lab Code: 200392-0 SPEX CERTIPREP, INC. 203 NORCROSS AVENUE METUCHEN, NJ 08840 732-549-7144 1-800-LAB-SPEX FAX:732-494-1747 www.SPEXCSP.COM

Discharge Monitoring Report - Quality Assurance Proficiency Testing Study

Data Reporting Sheet

STUDY #: ***DMROA21***

STUDY TYPE: ***DMRQACHEM***

Starting Date: 06/18/01 ***Closing Date:*** 09/14/01

NUTRIENTS

Wacker Siltronic Corp.

Catalog Number: PTSPEX-NUT-WP

7200 NW Front Ave.

Portland *OR* *97210*

Sales Order: 73201

Customer #: 110180*1

Lot #: 12-59N12-60N

OR01006 (Required - Enter corrections below)

EPA Lab Id #: 0 R 0 1 0 0 6

OR0030589 (Required - Enter corrections below)

Permittee #: 0 R 0 0 3 0 5 8 9

Extension (if applicable)

Analyte	*Analyte Code*	*VAF'*	*Method Code*	*Method Description*	*</>*	*Concentration*	*Units*	*Date of Analysis (mm/dd/yy)*
HPO4-P	0033			~~SM4500-PB+E20Ed~~		~~9.04~~	~~MILLIGRAMS/L~~	~~08/29/01~~
NH3-N	0031					.	MILLIGRAMS/L	/ /
NO3-N	0032					.	MILLIGRAMS/L	/ /
TOTAL KJEHALDEL- N	0034					.	MILLIGRAMS/L	/ /
TOTAL P	0035			SM4500-PB+E20ED		9.04	MILLIGRAMS/L	08/29/01

Please report the result on the diluted sample to three significant figures in mg/L.

' : Voluntary Analyte Flag -- Analytes marked with an "X" are voluntary for the DMRQA Study.

Authorized Signature: Thomas J. Rothschild ***Date:*** 7 Sep 2001

IMPORTANT: Permittees: SPEX CertiPrep must receive your completed form no later than 09/14/01

IMPORTANT: Commercial Laboratories: Your Permittee must receive your completed forms no later than 8/29/01

SCOEPA00018784

Lab Code: 200392-0 SPEX CERTIPREP, INC. 203 NORCROSS AVENUE METUCHEN, NJ 08840 732-549-7144 1-800-LAB-SPEX FAX:732-494-1747 www.SPEXCSP.COM

Discharge Monitoring Report - Quality Assurance Proficiency Testing Study

SPEX CertiPrep

Data Reporting Sheet

STUDY #: *DMRQA21*

STUDY TYPE: *DMRQACHEM*

Starting Date: 06/18/01 ***Closing Date:*** 09/14/01

pH

Catalog Number: PTSPEX-PH-WP

Wacker Siltronic Corp.

7200 NW Front Ave.

Portland *OR* *97210*

Sales Order: 73201

Customer #: 110180*1

Lot #: 12-46PH-PT

OR01006 (Required - Enter corrections below)

EPA Lab Id #: 0 R 0 1 0 0 6

OR0030589 (Required - Enter corrections below)

Permittee #: 0 R 0 0 3 0 5 8 9

Extension (if applicable)

Analyte	Analyte Code	VAF'	Method Code	Method Description	</>	Concentration	Units	Date of Analysis (mm/dd/yy)
pH	0019			SM4500H+B 20Ed		4.29	UNITS	09/10/01

Please report the result to three significant figures in units.

' : Voluntary Analyte Flag -- Analytes marked with an "X" are voluntary for the DMRQA Study.

Authorized Signature: Thomas J. Rothschild ***Date:*** 10 Sep 2001

IMPORTANT: Permittees: SPEX CertiPrep must receive your completed form no later than 09/14/01

IMPORTANT: Commercial Laboratories: Your Permittee must receive your completed forms no later than 8/29/01

SCOEPA00018785

Discharge Monitoring Report - Quality Assurance Proficiency Testing Study

STUDY #: ***DMRQA21***

STUDY TYPE: ***DMRQACHEM***

Duration: 06/18/01 - 09/14/01

MAIL OR FAX COMPLETED REPORT TO:

SPEX Certiprep, Inc.
PT Coordinator
CRM Division
203 Norcross Ave.
Metuchen, NJ 08840
FAX: 732-494-1747

PERMITTEES: SPEX CERTIPREP MUST RECEIVE YOUR COMPLETED REPORTS BY MIDNIGHT EST ON *09/14/01*

COMMERCIAL LABORATORIES: YOUR PERMITTEES MUST RECEIVE YOUR COMPLETED FORMS BY *8/29/01*

REPORT APPROVED BY:
(Laboratory Official)

OR01006 (Required - Enter corrections below)
EPA LAB ID: O R O O O 1 1

Name:
Title:
Address: Coffey Laboratories, Inc.
12423 NE Whitaker Way
Portland, Oregon 97230
Phone #: 503-254-1794
Fax #: 503-254-1452

Signature: Thomas J. Rothschild
Date: 10 Sep 2001

REPORT APPROVED BY:
(Permittee Official)
(Unless otherwise specified, the Performance Report will be sent to the person indicated below)

OR0030589 (Required - Enter corrections below)
PERMITTEE #: O R O 0 3 0 5 8 9

Extension (if applicable)

Name: Thomas J. Rothschild
Title: Facilities Chemist
Address: Wacker Siltronic Corporation
7200 N.W. Front Avenue
Portland, Oregon 97210
Phone #: 503-243-2020
Fax #: 503-417-4144

Signature: Thomas J. Rothschild
Date: 10 Sep 2001

PLEASE FILL IN THE FOLLOWING INFORMATION REGARDING THE AGENCY TO WHICH YOUR REPORT SHOULD BE SENT:

Contact Name: Judy Johndohl
Agency: Oregon DEQ
Address: Executive Building
811 SW Sixth Avenue
Portland, Oregon 97204

Phone #: 503-229-6896
Fax #:

PLEASE TREAT EACH PT STUDY SAMPLE THE SAME WAY YOU WOULD TREAT A ROUTINE SAMPLE.

DO NOT REVEAL RESULTS OR ANY OTHER ASPECT OF THIS TEST TO ANY PERSON OR OTHER LABORATORY UNTIL THE TEST ROUND IS CONCLUDED.

SPEX CertiPrep and Protocol Analytical Supplies confirm that this PT Program complies with NIST Handbook 150: NVLAP Procedures and General Requirements and with NIST Handbook 150-19: Chemical Calibration – Providers of Proficiency Testing.
PT materials and PT studies have been developed using the criteria in National Standards for Water Proficiency Testing Studies Criteria Document, USEPA dated December 1998.

No claims against SPEX CERTIPREP, Inc. of any kind whatsoever, whether based on breach of warranty, alleged negligence, or otherwise, with respect to this product shall be greater in amount than the purchase price of the product in respect of which damages are claimed, and in no event shall SPEX CERTIPREP, Inc. be liable for any loss of profits or any incidental, special or consequential damages.

SO#: 73201 *CID:* 110180*1

Lab Code: 200392-0 SPEX CERTIPREP, INC. 203 NORCROSS AVENUE METUCHEN, NJ 08840 732-549-7144 1-800-LAB-SPEX FAX:732-494-1747 www.SPEXCSP.COM

SCOEPA00018786

Discharge Monitoring Report - Quality Assurance Proficiency Testing Study

Data Reporting Sheet

STUDY #: *DMRQA21*

STUDY TYPE: *DMRQACHEM*

Starting Date: 06/18/01 *Closing Date:* 09/14/01

DEMAND

Wacker Siltronic Corp.

Catalog Number: *PTSPEX-DEM-WP*

OR00011

OR01006 (Required - Enter corrections below)

EPA Lab Id #: ~~OR01006~~

7200 NW Front Ave.

Sales Order: 73201

OR0030589 (Required - Enter corrections below)

Permittee #: OR0030589

Portland *OR* *97210*

Customer #: 110180*1

Extension (if applicable)

Lot #: 12-60DEM-PT

Analyte	Analyte Code	VAF'	Method Code	Method Description	</>	Concentration	Units	Date of Analysis (mm/dd/yy)
BOD	0038			EPA 405.1		14.3	MILLIGRAMS/L	08/23/01
CBOD	0102					.	MILLIGRAMS/L	/ /
COD	0036					.	MILLIGRAMS/L	/ /
TOC	0037					.	MILLIGRAMS/L	/ /

Please report the result on the diluted sample to three significant figures in mg/L.

' : Voluntary Analyte Flag -- Analytes marked with an "X" are voluntary for the DMRQA Study.

Authorized Signature: Thomas J. Rothschild *Date:* 10 Sep 2001

IMPORTANT: Permittees: SPEX CertiPrep must receive your completed form no later than 09/14/01

IMPORTANT: Commercial Laboratories: Your Permittee must receive your completed forms no later than 8/29/01

SCOEPA00018787

Lab Code: 200392-0 SPEX CERTIPREP, INC. 203 NORCROSS AVENUE METUCHEN, NJ 08840 732-549-7144 1-800-LAB-SPEX FAX:732-494-1747 www.SPEXCSP.COM

Discharge Monitoring Report - Quality Assurance Proficiency Testing Study

Data Reporting Sheet

STUDY #: *DMRQA21*

STUDY TYPE: *DMRQACHEM*

Starting Date: 06/18/01 ***Closing Date:*** 09/14/01

TRACE METALS FOR DMRQA

Catalog Number: ***PTSPEX-TM-DMRQA***

Wacker Siltronic Corp.

7200 NW Front Ave.

Portland *OR* *97210*

Sales Order: 73201

Customer #: 110180*1

Lot #: 12-51TM-PT

OR0 0 0 1 1

OR01006 (Required - Enter corrections below)

EPA Lab Id #: ~~O R 0 1 0 0 6~~

OR0030589 (Required - Enter corrections below)

Permittee #: O R 0 0 3 0 5 8 9

Extension (if applicable)

Analyte	Analyte Code	VAF'	Method Code	Method Description	</>	Concentration	Units	Date of Analysis (mm/dd/yy)
ALUMINUM	0001			~~EPA218.2~~		~~9.~~	~~MICROGRAMS/L~~	~~/ /~~
ARSENIC	0002					.	MICROGRAMS/L	/ /
CADMIUM	0004					.	MICROGRAMS/L	/ /
CHROMIUM	0006			EPA218.2		369.0	MICROGRAMS/L	08/14/01
COBALT	0005					.	MICROGRAMS/L	/ /
COPPER	0007					.	MICROGRAMS/L	/ /
IRON	0008					.	MICROGRAMS/L	/ /
LEAD	0012					.	MICROGRAMS/L	/ /
MANGANESE	0010					.	MICROGRAMS/L	/ /
MERCURY	0009					.	MICROGRAMS/L	/ /
NICKEL	0011					.	MICROGRAMS/L	/ /
SELENIUM	0013					.	MICROGRAMS/L	/ /
VANADIUM	0014					.	MICROGRAMS/L	/ /
ZINC	0015					.	MICROGRAMS/L	/ /

Please report the results on the diluted sample to three significant figures in ug/L.

' : Voluntary Analyte Flag -- Analytes marked with an "X" are voluntary for the DMRQA Study.

Authorized Signature: Thomas J. Rothschild ***Date:*** 10 Sep 2001

IMPORTANT: Permittees: SPEX CertiPrep must receive your completed form no later than 09/14/01

IMPORTANT: Commercial Laboratories: Your Permittee must receive your completed forms no later than 8/29/01

Lab Code: 200392-0 SPEX CERTIPREP, INC. 203 NORCROSS AVENUE METUCHEN, NJ 08840 732-549-7144 1-800-LAB-SPEX FAX:732-494-1747 www.SPEXCSP.COM

SCOEPA00018788

WACKER
Wacker Siltronic Corporation

April 11, 1997

Mr. Timothy P. Dean
Permit Manager
City of Portland
Environmental Services
6543 N. Burlington Avenue
Portland, OR 97203-2098

ER16:TM

RE: Accidental Slug Loading Report

Dear Mr. Dean:

This report describes the events which resulted in a overflow of wastewater to the City sewer system and is submitted for compliance with General Condition 21 (a.) of our Municipal Pretreatment Program Wastewater Discharge Permit Number 469-001.

At 4:00 p.m., April 7, 1997 we experienced a power loss to a panel which supplied power to wastewater flow control valves. This power failure resulted in wastewater backing up in the forwarding sumps which led to an overflow condition to the sanitary sewer system. The incident lasted fifteen minutes with a maximum flow of 140 gpm.

When the control valves failed, the wastewater treatment plant operators were alerted and responded immediately. The operator opened the manual override on the automatic control valves and operated the forwarding sump pumps in manual mode which bypassed the failed systems. This fast response limited the overflow condition to fifteen minutes. All other permit parameters were in compliance. The Wastewater Treatment Operator called me and the Columbia Boulevard Wastewater Treatment Plant Duty Supervisor Carl Costello to inform him of the overflow. An additional call was made to the Spill Report Duty Officer beeper number. No response was received. It was noted that the CBWWTP phone number in our permit was incorrect.

The power failure was caused by a defective power supply in a new power control unit supporting the Unicor Alarm screen. This screen controls all of the alarms at the Wastewater Treatment Plant. This unit has been replaced and all systems are back on line. If you have any questions, please call me at 241-7532.

Sincerely,

Thomas C. McCue

Thomas C. McCue

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180
Phone (503) 243-2020
TDD (503) 241-7519

An ISO 9001 Certified Corporation

NPDES Report Daily Max

Outfall 001 Maximum

Month	Process waste water (mil gal/day)	BOD (mg/L)	BOD (mg/l) Limit	TSS (mg/L)	TSS Limit (mg/L)	Cr +6 (mg/L)	Cr +6 Limit (mg/L)	Cr Total (mg/L)	Cr Total Limit (mg/L)	Fluoride (mg/L)	Fluoride Limit (mg/L)	Total PO4 (mg/L)	Total PO4 Limit (mg/L)	TTO (mg/L)	TTO Limit (mg/L)
Jan-99	973000	5.3	30	4.8	61	0.01	0.05	0.01	1	4.7	32	0.2	61	0.01	1.37
Feb-99	912000	4.3	30	3.8	61	0.01	0.05	0.01	1	5.1	32	0.2	61	0.1	1.37
Mar-99	893000	5.2	30	4.5	61	0.01	0.05	0.01	1	4.7	32	0.3	61	0.1	1.37
Apr-99	927000	8.7	30	2.8	61	0.01	0.05	0.01	1	5.3	32	0.7	61	0.1	1.37
May-99	943000	5.7	30	3.5	61	0.01	0.05	0.01	1	6	32	0.1	61	0.1	1.37
Jun-99	952000	6.7	30	2.3	61	0.01	0.05	0.01	1	4.6	32	0.1	61	0.1	1.37
Jul-99	986000	9.4	30	2.3	61		0.05	0.01	1	7.4	32	0.1	61	0.1	1.37
Aug-99	924000	8.6	30	2	61	0.01	0.05	0.01	1	7.2	32	1.2	61	0.1	1.37
Sep-99	1060000	9.6	30	1.3	61		0.05	0.01	1	5.4	32	0.1	61	0.1	1.37
Oct-99	990000	7.3	30	1.9	61	0.01	0.05	0.01	1	7.1	32	0.1	61	0.1	1.37
Nov-99	990000	9.38	30	2.5	61	0.01	0.05	0.01	1	6.2	32	0.136	61	0.1	1.37
Dec-99	996000	26.04	30	2.875	61	0.01	0.05	0.01	1	6	32	0.16	61	0.1	1.37
Jan-00	1070000	12.8	30	6.4	61		0.05	0.01	1	5.9	32	0.1	61	0.1	1.37
Feb-00	1126000	7.39	30	2.875	61	0.01	0.05	0.01	1	6.2	32	0.107	61	0.1	1.37
Mar-00	1068000	7.69	30	3.75	61	0.01	0.05	0.01	1	6	32	1.218	61	0.1	1.37
Apr-00	1215000	6.44	30	6.3	61	0.01	0.05	0.01	1	6.3	32	0.1	61	0.1	1.37

Update Procedure

Get NPDES Monthly Data

To add the data select the cell in column A where the new month should be and click the button

If that doesn't work try the following

Open L:\Group\Environmental\NPDES\Current.xls
Select "Info Page" Sheet
Select Cells A46 to AC46
Copy the Cells
Return to this Sheet (**Window** Menu - Current.xls)
Select the cell in column 'A' where you want to add the months data
Select **Edit** menu
Select **Paste Special**
Select **Values** and **OK**
Done

SCOEPA00018790

CONSUMPTION TOTALS

1999

SYSTEM	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC	
NATURAL GAS	MCF	MCF	MCF	MCF	MCF	MCF	MCF	MCF	MCF	MCF	MCF	MCF	
NATURAL GAS USE	17.8	16.1	17.5	15.2	12.5	12.7	11.0	10.3	11.1	12.5	14.0	16.6	167
Boiler 5	6.30	4.90	3.30	4.60	4.20	3.00	3.60	3.40	1.00	1.50	0.40	4.10	
Boiler 6	2.20	4.40	3.10	0.60	4.30	4.90	3.10	0.50	5.80	0.50	1.70	4.70	
Boiler 7	7.90	5.70	5.80	3.30	3.50	3.90	3.80	0.00	3.40	2.60	5.50	3.60	
			0	0								0	
WATER USE	1,000 GAL	1,000 GAL	1,000 GAL	1,000 GAL	1,000 GAL	1,000 GAL	1,000 GAL	1,000 GAL	1,000 GAL	1,000 GAL	1,000 GAL	1,000 GAL	
FAB 1 DEAERATOR #1 MAKEUP	0	0	0	0	0	0	0	0	0	0	0	0	
FAB 1 DEAERATOR #2 MAKEUP	2	0	37	36	0	0	0	52	2	70	42	17	
FAB 2 DEAERATOR #3 MAKEUP	89	74	83	64	95	94	73	53	67	18	35	84	
TOTAL BOILER MAKEUP	90	74	120	100	95	94	73	106	68	88	77	101	1,085
COOLING LOOPS:	0	0	0	0	0	0	0	0	0	0	0	0	
LOOP #1 MAKEUP	0	0	0	0	0	0	0	0	0	1	0	0	
LOOP #2 MAKEUP	135	148	2,025	158	145	145	137	850	880	101	786	785	
LOOP #3 MAKEUP	3,572	3,264	1,740	3,378	2,844	3,255	3,482	2,839	2,550	3,108	2,186	1,990	
LOOP #4 MAKEUP	11	6	12	7	6	8	9	12	16	13	14	19	
LOOP #5a MAKEUP	0	2	6	6	1	0	1	0	2	17	84	74	
LOOP #5b MAKEUP	0	0	0	0	6	0	0	0	0	0	0	0	
FAB 2 PCW MAKEUP	0	1	21	2	1	1	0	0	1	86	1	0	
FAB 2 CHILLER MAKEUP	16	15	20	15	10	12	11	15	0	0	0	0	
FAB 2 GLYCOL MAKEUP	0	0	0	0	0	0	0	0	0	0	0	0	
HEAT RECOVERY MAKEUP	0	13	0	13	24	35	38	57	46	38	34	33	
TOTAL LOOP MAKEUP	3,734	3,447	3,825	3,578	3,036	3,456	3,677	3,773	3,496	3,364	3,106	2,902	41,393
COOLING TOWERS:	0	0	0	0	0	0	0	0	0	0	0	0	
HVAC TOWER MAKEUP	259	250	294	342	325	422	456	469	448	342	328	99	
GROWING TOWER MAKEUP	181	184	248	230	186	223	325	360	323	261	249	266	
LOOP 3 TOWER	35	25	20	12	31	15	8	3	0	0	140	119	
FAB 1 TOWER # 16 MAKE UP	350	341	335	394	362	529	560	603	379	279	439	15	
FAB 1 TOWER # 10 MAKE UP	601	590	666	700	662	793	793	781	765	677	920	587	
FAB 1 TOWER # 11 MAKE UP	107	0	48	0	205	18	54	438	434	343	199	719	
FAB 2 TOWER #17	1	2	5	36	4	48	15	8	7	9	3	2	
FAB 2 TOWER #18	10	12	2	0	5	0	6	31	25	2	2	0	
FAB 2 TOWER #19	89	98	134	153	168	315	416	511	522	489	343	298	
FAB 2 TOWER #20	17	32	11	4	5	4	3	0	2	0	0	0	
FAB 2 TOWER #21	58	6	31	60	11	5	0	6	1	0	0	0	
TOTAL TOWER MAKEUP	1,449	1,289	1,500	1,589	1,638	1,949	2,180	2,743	2,458	2,061	2,294	2,006	23,157
FAB 1 RODI PRODUCTION:	0	0	0	0	0	0	0	0	0	0	0	0	
RO METER 1A	2,005	2,328	2,253	2,530	2,017	2,061	2,163	1,901	2,319	2,601	2,646	3,016	
RO METER 1B	1,940	1,677	1,693	1,806	1,806	2,231	1,975	2,413	1,443	2,036	2,387	2,237	
RO METER 1C	1,623	1,700	1,633	1,506	1,342	1,878	1,759	876	2	1,259	1,755	1,643	
RO METER 2A	2,177	1,756	2,353	2,438	964	830	542	936	900	371	589	430	
RO METER 2B	1,922	1,508	1,697	1,829	1,757	1,700	1,818	1,860	2,913	2,297	2,023	1,984	
RO METER 2C	1,733	1,355	1,852	1,884	1,545	1,807	1,918	2,621	2,796	1,963	1,792	1,902	
FAB 1 RO #1	5,568	5,704	5,579	5,842	5,165	6,170	5,897	5,190	3,763	5,896	6,787	6,896	
FAB 1 RO #2	5,832	4,618	5,901	6,151	4,265	4,337	4,279	5,417	6,609	4,631	4,404	4,315	
FAB 1 RO Output	11,400	10,322	11,480	11,993	9,431	10,507	10,176	10,606	10,372	10,527	11,191	11,211	129,216
EST Fab 1 RO Reject	3,420	3,097	3,444	3,598	2,829	3,152	3,053	3,182	3,112	3,158	3,357	3,363	
EST Fab 1 MM Backwash	92	92	92	92	92	92	92	92	92	92	92	92	
TOTAL FAB 1 RODI USE	14,911	13,510	15,015	15,682	12,352	13,751	13,320	13,880	13,576	13,777	14,640	14,666	169,078
FAB 2 UPW PRODUCTION:													
FAB 2 RO TRAIN 1, BANK 1	1,120	1,872	2,077	1,530	1,553	2,038	1,773	1,757	1,792	2,000	1,911	1,857	
FAB 2 RO TRAIN 1, BANK 2	1,261	1,864	2,046	1,659	1,620	2,063	1,790	1,731	1,770	1,991	1,892	1,907	
FAB 2 RO TRAIN 2, BANK 1	2,103	1,564	1,617	2,078	1,762	1,966	1,769	1,752	1,747	1,965	1,875	1,885	
FAB 2 RO TRAIN 2, BANK 2	2,321	1,580	1,629	2,246	1,770	1,978	1,777	1,773	1,842	1,864	1,911	1,887	
FAB 2 RO TRAIN 3, BANK 1	2,158	1,833	2,082	1,965	1,666	1,784	1,804	1,704	5,182	1,701	1,863	1,833	
FAB 2 RO TRAIN 3, BANK 2	2,131	1,695	2,080	2,004	1,416	1,688	1,805	1,706	1,794	1,775	2,093	1,869	
FAB 2 RO TRAIN 4, BANK 1	0	0	0	0	0	0	0	0	0	0	0	0	
FAB 2 RO TRAIN 4, BANK 2	0	0	0	0	0	0	0	0	0	0	0	0	
FAB 2 RO Output	11,094	10,408	11,531	11,482	9,787	11,517	10,718	10,423	14,127	11,295	11,544	11,238	135,165
EST Fab 2 RO Reject	3,328	3,122	3,459	3,445	2,936	3,455	3,215	3,127	4,238	3,389	3,463	3,371	
EST Fab 2 MM Backwash	1,082	1,015	1,124	1,119	954	1,123	1,045	1,016	1,377	1,101	1,126	1,096	
TOTAL FAB 2 UPW USE	15,504	14,545	16,115	16,046	13,677	16,095	14,978	14,566	19,742	15,785	16,133	15,705	188,893
ESTIMATED DOMESTIC USE	793	666	674	652	584	799	889	928	865	722	797	707	
TOTAL WATER USE	36,482	33,531	37,248	37,647	31,382	36,144	35,118	35,995	40,206	35,797	37,047	36,087	432,683
WASTE TREATMENT:													
Forwarding Flows													
Fab 1 To Fab 2 Flows													
OWW	11,000	10,000	10,800	10,800	9,600	11,000	11,200	11,700	11,200	10,900	11,000	10,700	
CAD	4,000	3,400	3,800	4,000	3,700	3,900	3,800	3,800	4,000	4,300	4,400	4,500	
WAD	9,000	7,800	9,300	9,000	8,100	9,800	9,600	10,100	10,000	10,000	10,700	10,900	
Fab 2 Flows													
OWW													
CAD													
WAD													
WWTP Effluent													
FAB 1 CE	29	35	26	6	17	13	7	7	6	8	42	26	no discharge
FAB 2 CE	25,203	22,987	25,544	25,544	23,984	27,931	27,179	27,563	27,508	27,823	29,905	29,007	320,177
FAB 1 OWW	407	343	288	297	591	816	845	1,140	344	875	1,009	544	no discharge
FAB 2 OWW	19,923	19,877	20,787	22,182	18,297	20,347	20,599	22,008	21,641	20,957	22,219	20,449	249,283
MV-3	17,187	15,411	17,170	17,172	14,976	16,529	16,503	16,637	11,653	8,592	8,822	9,442	170,093
SANITARY/MV-2	793	666	674	652	584	799	889	928	865	722	797	707	9,076
TOTAL WASTE	63,542	59,320	64,489	65,853	58,448	66,435	66,021	68,283	62,017	58,977	62,794	60,174	756,352
CITY METER		0	0	0	0	0	0	0	0	0	0	0	
FAB 1 CITY WATER	31,385	28,054	31,554	31,667	28,660	33,032	33,881	35,429	34,546	33,941	34,756	35,122	
FAB 2 CITY WATER	26,311	24,018	26,935	27,081	24,157	27,740	26,696	25,866	26,101	26,244	27,605	27,538	
TOTAL CITY WATER	57,696	52,072	58,490	58,748	52,816	60,771	60,577	61,295	60,648	60,184	62,361	62,660	708,318
ESTIMATED PROCESS WATER	21,214	18,541	21,242	21,101	21,435	24,627	25,459	25,300	20,442	24,388	25,314	26,573	

SCOEPA00018791

MV-3 Maximum

Month	Flows (gal/day)	Phosphates (mg/l)	Phosphates Limits (mg/l)
Jan-99	911000	0.2	5
Feb-99	917000	1.3	5
Mar-99	678000	1	5
Apr-99	829000	2.1	5
May-99	762000	0.2	5
Jun-99	830000	0.1	5
Jul-99	667000	0.7	5
Aug-99	1078000	0.8	5
Sep-99	707000	0.1	5
Oct-99	445000	0.2	5
Nov-99	445000	0.246	5
Dec-99	429000	1.627	5
Feb-00	0	0.381	5
Feb-00	1705000	0.381	5
Mar-00	221000	0.155	5
Apr-00	329000	0.2	5

Outfall Maximum

Flow (gal/day)	Temp (F)	Temp Limit (F)	pH Average	pH Upper Limit	pH Lower Limit
1676000	77.4	85	7.1	9	6
1829000	70.2	85	7	9	6
1525000	71.1	85	7	9	6
1522000	70.9	85	7	9	6
1597000	71	85	7.1	9	6
1750000	73.5	85	7.1	9	6
1569000	75.9	85	7.2	9	6
1962000	71.3	85	7.2	9	6
1653000	76.6	85	7	9	6
1363000	76.2	85	7.1	9	6
1363000	74.2	85	7.29	9	6
1404000	72.1	85	7.228	9	6
0	73.1	85	7.125	9	6
2735000	73.1	85	7.125	9	6
1238000	69.8	85	7.144	9	6
1402000	70.5	85	7.205	9	6

SCOEPA00018792

NITRATES C. E. COMPOSITE

'1998

Date	Nitrate, mg/L
21-May	528
29-May	396
4-Jun	418
18-Jun	330
26-Jun	396
2-Jul	374
9-Jul	330
16-Jul	462
6-Aug	264
13-Aug	242
20-Aug	385
24-Sep	418
22-Oct	330
19-Nov	110
24-Nov	198
3-Dec	154
23-Dec	396

337.12

'1999

Date	Nitrate, mg/L
7-Jan	638
14-Jan	440
21-Jan	572
28-Jan	374
4-Feb	440
26-Feb	484
4-Mar	374
18-Mar	418
25-Mar	308
1-Apr	374
8-Apr	396
15-Apr	374
6-May	660
7-May	352
27-May	396
24-Jun	352
1-Jul	396
20-Aug	374
26-Aug	572
2-Sep	484
9-Sep	462
16-Sep	242
23-Sep	308
30-Sep	154
7-Oct	264
14-Oct	484
21-Oct	396
28-Oct	418
4-Nov	418
11-Nov	330
18-Nov	462
26-Nov	352
2-Dec	418
9-Dec	594
16-Dec	462

415.49

CAD w/o CAED

Date	Nitrate, mg/L	Fluoride, mg/L	pH
17-Nov	462	115	2.16
19-Nov	176	75	2.7
3-Dec	132	85.5	2.3
15-Dec	396	45	2.14
16-Dec	462	85	2.2
17-Dec	440	55	2.16
18-Dec	352	80	2.3

345.7143

SCOEPA00018793

AQUATIC TOXICOLOGY REPORT:

CHRONIC DEFINITIVE
BIOASSAYS CONDUCTED
October 8 through October 15, 2002
MXA21007T

Ceriodaphnia dubia
Pimephales promelas

Prepared for:

WACKER SILTRONIC CORPORATION
7200 NW Front Ave.
Portland, OR 97210

Prepared by:

COFFEY LABORATORIES, INC.
12423 NE Whitaker Way
Portland, OR 97230

October 23, 2002

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ANALYTICAL NARRATIVE

Mr. Thomas J. Rothschild
Wacker Siltronic
7200 NW Front Ave
Portland, OR 97210

October 23, 2002
Job #: MXA21007T

Re: Statistical Analysis - Toxicity Tests

Coffey Laboratories, Inc. has completed the statistical analysis of the data collected from dual endpoint toxicity tests which were conducted from 10/8/02 through 10/15/02 on effluent provided by Wacker, Inc. The enclosed report includes a summary of the *Ceriodaphnia dubia* and Fathead Minnow tests and results, along with the raw data and statistical summaries for the effluent and reference toxicant.

In summary of the results, hypothesis tests method showed a statistically significant reduction in survival of both the Fathead Minnow and *Ceriodaphnia dubia* at <1.9 percent effluent and >30 percent effluent concentration, respectively. Therefore, the No-Observed-Effect-Concentration (NOEC) was at the <1.9 percent effluent concentration for Fathead Minnows and 30 percent effluent concentration for *Ceriodaphnia dubia*. The LC_{50}, the concentration of effluent estimated to kill 50 percent of the test organisms, for both Fathead Minnow and *Ceirodaphnia* was >30 percent effluent. *Ceirodaphnia* reproduction tests showed statistically significant reductions at <1.9 percent effluent concentrations, yielding a NOEC of <1.9 percent. Statistically significant reductions in Fathead Minnow growth at 30 percent effluent concentration yielded a NOEC of 15 percent effluent concentration. In addition, the chronic IC_{25} values (an estimate of the effluent concentration causing a 25 percent reduction in biological growth) for Fathead Minnow growth and *Ceriodaphnia dubia* reproduction were 24.4 percent effluent and <1.9 percent effluent, respectively.

Acute data was derived from the chronic test data in the Fathead Minnow tests. Data from the Fathead Minnow 96-hour acute test showed a statistically significant reduction in survival at the 30 percent effluent concentration. In the separate 48-hour acute test performed for the *Ceriodaphnia dubia* a statistically significant difference was found at the 15 percent effluent concentration. Thus, the acute NOEC values for *Ceriodaphnia dubia* and Fathead Minnow survival were 15 percent effluent and 7.5 percent effluent, respectively.

Coffey Laboratories' Aquatic Toxicology Department is accredited by the Washington State Department of Ecology which demonstrates the high priority we place on Quality Assurance. It is our goal to meet all of your needs by offering the highest quality services in the most efficient manner possible. If you would like further assistance, or should you have other questions regarding Aquatic testing, please feel free to contact Peter at (503) 254-1794. We look forward to working with you in the future to ensure the health of our Northwest waterways.

Sincerely,
COFFEY LABORATORIES, INC.

Peter Farrelly
Aquatic Biologist

Approved by,

Ragheda Kaady
Quality Assurance

COFFEY LABORATORIES, INC.
12423 N.E. Whitaker Way • Portland, OR • 97230 • (503) 254-1794 • FAX (503) 254-1452

INTRODUCTION

Coffey Laboratories, Inc. conducted two chronic and two acute definitive bioassay tests using the water flea (Ceriodaphnia dubia) and the Fathead Minnow (Pimephales promelas) on samples provided by Wacker Siltronic The tests were conducted from October 8 through October 15, 2002.

METHODS AND MATERIALS

Test Methods: The chronic test methods were performed according to Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Lewis, P.A. *et al.*; EPA/600/4-91/002 (1994). The acute Fathead Minnow test results were derived from the chronic data and were analyzed according to *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater Organisms,* Weber, C.I. *et al.*; EPA/600/4-90/027F (1993). The *Ceriodaphnia dubia* acute 48-hour survival test was performed in a separate test and not derived from the chronic test.

Test Organisms: The Ceriodaphnia dubia used in the chronic test were obtained from Coffey Laboratories, Inc. in-house cultures and were less than 24 hours old and within an 8-hour age range at test initiation. The Fathead Minnows used in the chronic test were obtained from Aquatic Biosystems, Inc., Ft. Collins, CO (See Appendix D) and were 24 - 36 hours old at test initiation. All organisms tested were fed and maintained during culturing, acclimation, and testing as prescribed by the EPA/600/4-91/002 (1994). The test organisms appeared vigorous and in good condition prior to testing.

Dilution Water: The dilution water used for the Fathead Minnow and *Ceriodaphnia dubia* tests was reconstituted moderately hard water (EPA/600/4-91/002) with a total hardness and alkalinity of 61 and 96 mg/L as $CaCO_3$, respectively.

Test Concentrations: The concentrations tested in the chronic tests were 1.9, 3.75, 7.5, 15, and 30 percent effluent and dilution water alone for the control. Ten fish were placed in each of four replicates per concentration for the Fathead Minnow chronic test. For the chronic Ceriodaphnia test, 10 organisms per concentration were used with 10 test vessels per concentration and one organism per vessel. The concentrations tested in the acute tests were the same as in the chronic tests. Five organisms were placed in each of four replicates per concentration for the Ceriodaphnia acute test

Sample Collection: Samples were collected by Wacker Siltronic personnel on October 6, 8, and 10, 2002 (See Chain-of-Custody). The samples were picked up by Coffey Laboratories personnel and transported to the laboratory. Samples were stored in the dark at 4°C until test solutions were prepared.

Sample Preparation: The samples used during the chronic tests were diluted and temperature adjusted prior to each daily renewal. Acute tests were static and were not renewed.

Monitoring of Bioassays: Pre- and post-renewal solutions were monitored for dissolved oxygen daily in each concentration, as well as for pH in the control and 100 percent effluent concentration. Additionally, the pH was measured in all the post-renewal solutions of every concentration. Conductivity, alkalinity, and hardness were measured in each new sample (100 percent effluent) and in the control. Ceriodaphnia dubia survival and neonate production was monitored daily in the chronic test. According to EPA/600/4-91/002 (1994), Ceriodaphnia dubia tests should be terminated when 60 percent or more of the surviving female Ceriodaphnia in the controls have produced their third brood and at least 15 neonates per adult. In addition, control organism survival must be equal to or greater than 80 percent. Fathead Minnow mortality was measured daily and fish growth was measured by dry weight analysis at the conclusion of the Fathead Minnow chronic test. Temperature was monitored continuously throughout the 7-day period.

Data Analysis: All statistical analyses were performed using WEST, Inc. computer package, Toxstat, Version 3.5. This program utilizes, among others, Dunnett's, Steel's Many One Rank Sum, and Wilcoxon's Rank Sum Analyses for the hypothesis endpoint estimates, and Probit, Spearman-Karber, and Linear Interpolation methods for point estimates.

The effect measured for acute tests is survival over the exposure period. The effects measured for Ceriodaphnia dubia chronic tests are survival and reproduction over the 7-day exposure period. The effects measured for Fathead Minnow chronic tests are survival and growth over the 7-day exposure period. The statistical analyses performed are those outlined in Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, EPA/600/4-91/002, and *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms,* EPA/600/4-90/027F. Dunnett's, T-test with Bonferroni Adjustment, Steel's Many-One Rank Sum, or Wilcoxon Rank Sum Tests are used to determine the No-Observed-Effect-Concentration (NOEC) and the Lowest-Observed-Effect-Concentration (LOEC) when analyzing the survival and growth data of the Fathead Minnow, as well as the reproduction data of the *Ceriodaphnia dubia*. Fisher's Exact Test or Steel's Many-One Rank Sum Test is used to analyze the survival data of the *Ceriodaphnia dubia* tests. When the assumptions of normality or homogeneity of variance necessary for Dunnett's Procedure or T-test with Bonferroni Adjustment cannot be met, Steel's Many-One Rank Sum Test or Wilcoxon Rank Sum with Bonferroni Adjustment is used to analyze the data. In addition, the Linear Interpolation method is used to determine the chronic IC_{25} values (the concentration of effluent causing a 25 percent reduction in biological growth) for the Fathead Minnow growth data and the *Ceriodaphnia dubia* reproduction data.

RESULTS AND DISCUSSION

Chronic Bioassays:

Table 1 summarizes the survival and growth data for the Fathead Minnow test conducted.

Table 1
Fathead Minnow Results

Sample Concentration (%)	Percent Survival	Mean Dry Weight per Fish (mg)
Control	100	0.549
1.9	85 *	0.421 *
3.75	90	0.446
7.5	82.5 *	0.492
15	87.5 *	0.533
30	70 *	0.375 *

* Indicates a statistically significant reduction from control at $p \leq$ to 0.05 using Steel's Many-One Rank Test.

Results using Steel's Many-One Rank Test showed a statistically significant reduction in survival when compared to the control at the 1.9 percent effluent concentration. Dunnett's Test showed a statistically significant difference in growth of Fathead Minnows at the 30 percent effluent concentration (the significant difference observed at the 1.9 percent concentration has been identified as an anomalous result). Therefore, the NOEC values for survival and growth were <1.9 percent effluent and 30 percent effluent, respectively. Control survival was 100 percent.

The chronic LC_{50} value (an estimate of the effluent concentration which is lethal to 50 percent of the test organisms) for Fathead Minnow survival was >30 percent effluent. The chronic IC_{25} value for Fathead Minnow growth was 24.4 percent effluent.

The dissolved oxygen levels remained above 40 percent saturation throughout the tests. Test temperatures were steady at $25 \pm 1°C$. The tests proceeded without interruption or incident that could have affected test results.

RESULTS AND DISCUSSION (Cont.)

Chronic Bioassays (Cont.):

Table 2 summarizes the survival and reproduction data for the Ceriodaphnia dubia test.

Table 2
Ceriodaphnia dubia Results

Concentration (%)	Percent Survival	Number of Young per Adult
Control	80	24.5
1.9	80	1.2*
3.75	40	1.7*
7.5	70	0.1*
15	80	0.6*
30	40	0.3*

* Indicates a statistically significant reduction from control at $p \leq$ to 0.05 using Fisher's Exact Test or Steel's Many One Rank Test.

Results using Fisher's Exact Test showed no statistically significant reduction in survival when compared to the control at any effluent concentration. Steel's Many One Rank Test showed reduction in reproduction when compared to the controls at every effluent concentration. Therefore, the NOEC values for survival and reproduction were 30 percent and <1.9 percent effluent, respectively. Control survival was 80 percent.

The chronic LC_{50} value for *Ceriodaphnia dubia* survival was >30 percent effluent. The chronic IC_{25} value for *Ceriodaphnia dubia* reproduction was 0.5 percent effluent.

The dissolved oxygen levels in the tests remained above 40 percent saturation throughout the test. Test temperatures were steady at $25 \pm 1°C$. The tests proceeded without interruption or incident that could have affected test results.

RESULTS AND DISCUSSION (Cont.)

Acute Results:

Table 3 summarizes the survival data for the acute screening tests using the Fathead Minnow and the Ceriodaphnia dubia.

Table 3
Summary of Acute Results

Species	Concentration (%)	Percent Survival		
		0 Hour	24 Hours	96/48 Hours
Fathead Minnow (96 Hours)	Control	100	100	100
	100	100	92.5	75*
Ceriodaphnia dubia (48 Hours)	Control	100	90	80
	100	100	50	25*

* Indicates a statistically significant reduction from the control at $p \leq 0.05$ using Steel's Many One Rank Test or Wilcoxon's Rank-Sum Test.

Dual-endpoint testing allows the acute test results to be derived from the chronic Fathead Minnow test data. In the Fathead Minnow 96-hour acute test, Steel's Many One Rank Test showed a statistically significant reduction in survival between the control organisms and those in the 30 percent effluent concentrations. Steel's Many One Rank Test showed a significant reduction in survival between the control organisms and those in the 30 percent effluent concentrations in the *Ceriodaphnia dubia* 48-hour acute test. Further analysis reveals acute NOEC values for Fathead Minnow and *Ceriodaphnia dubia* survival were 15 percent effluent and 7.5 percent effluent, respectively.

RESULTS AND DISCUSSION (Cont.)

Reference Toxicant Tests:

Tables 4 & 5 summarize the results from the *Ceriodaphnia dubia* and the Fathead Minnow chronic and acute reference toxicant tests conducted in October.

Table 4
Chronic Reference Toxicant Tests with Sodium Chloride

Species (test)	Point Estimates	95% C.I.
Pimephales promelas (survival - LC_{50})	2.8 %	2.38 - 3.22 %
Pimephales promelas (growth - IC_{25})	1.68 %	0.17 - 2.11 %
Ceriodaphnia dubia (survival - LC_{50})	3.85 %	---
Ceriodaphnia dubia (reproduction - IC_{25})	0.38 %	---

Table 5
Acute Reference Toxicant Tests

Species	LC_{50}	95% C.I.
Pimephales promelas	4.9 %	---
Ceriodaphnia dubia	4.5 %	---

The results of the reference toxicant tests with sodium chloride (*Ceriodaphnia dubia* and Fathead Minnow) conducted in October indicate that the test organisms were within their respective sensitivity range based on EPA guidelines (EPA/600/4-91/002, 1994). The chronic IC_{25} values, as well as the LC_{50} values and the respective 95 percent confidence intervals are listed in the Tables above. The data sheets for the reference toxicant tests are provided in Appendix B.

WATER QUALITY PARAMETERS

Lab Sample ID: A21007T-1
Field ID: 02-125
Date/Time: 10/07/02 0800
Matrix: Waste Water

EPA Category: Inorganic Chemicals

Parameter	Method	Detection Limit	Analytical Result	Units
Ammonia Nitrogen	sm4500nh3bc	1.	ND	mg/L
Ammonia Nitrogen	sm4500nh3bc	1.	1.	mg/L
Conductivity	EPA 120.1	0.5	960.	µmhos/cm
Nitrate	EPA 300.0	0.1	29.	mg/L
Alkalinity	EPA 310.1	5.	18.	mg/L
Residual Chlorine	SM 4500-Cl-G	0.05	ND	mg/L
Total Chlorine	SM 4500-Cl-G	0.05	ND	mg/L
Chloramine	SM 4500-Cl-G	0.05	ND	mg/L
Total Hardness	SM 2340-B	2.	170.	mg/L
Calcium	EPA 200.7	0.5	65.	mg/L
Magnesium	EPA 200.7	0.5	1.8	mg/L
Hydrogen Peroxide	Scott Method	0.5	9.6	mg/L

ND means none detected at or above the detection limit listed.

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WATER QUALITY PARAMETERS (cont.)

Lab Sample ID: A21007T-2
Field ID: 02-131
Date/Time: 10/09/02 0745
Matrix: Waste Water

EPA Category: Inorganic Chemicals

Parameter	Method	Detection Limit	Analytical Result	Units
Ammonia Nitrogen	sm4500nh3bc	1.	ND	mg/L
Ammonia Nitrogen	sm4500nh3bc	1.	ND	mg/L
Conductivity	EPA 120.1	0.5	1000.	μmhos/cm
Nitrate	EPA 300.0	0.1	44.	mg/L
Alkalinity	EPA 310.1	5.	15.	mg/L
Residual Chlorine	SM 4500-Cl-G	0.05	ND	mg/L
Total Chlorine	SM 4500-Cl-G	0.05	ND	mg/L
Chloramine	SM 4500-Cl-G	0.05	ND	mg/L
Total Hardness	SM 2340-B	2.	220.	mg/L
Calcium	EPA 200.7	0.5	84.	mg/L
Magnesium	EPA 200.7	0.5	2.	mg/L
Hydrogen Peroxide	Scott Method	0.5	7.74	mg/L

ND means none detected at or above the detection limit listed.

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WATER QUALITY PARAMETERS (cont.)

Lab Sample ID: A21007T-3
Field ID: 02-132
Date/Time: 10/11/02 0730
Matrix: Waste Water

EPA Category: Inorganic Chemicals

Parameter	Method	Detection Limit	Analytical Result	Units
Ammonia Nitrogen	sm4500nh3bc	1.	1.	mg/L
Conductivity	EPA 120.1	0.5	950.	µmhos/cm
Nitrate	EPA 300.0	0.1	72.	mg/L
Alkalinity	EPA 310.1	5.	13.	mg/L
Residual Chlorine	SM 4500-Cl-G	0.05	ND	mg/L
Total Chlorine	SM 4500-Cl-G	0.05	ND	mg/L
Chloramine	SM 4500-Cl-G	0.05	ND	mg/L
Total Hardness	SM 2340-B	2.	310.	mg/L
Calcium	EPA 200.7	0.5	120.	mg/L
Magnesium	EPA 200.7	0.5	2.4	mg/L
Hydrogen Peroxide	Scott Method	0.5	14.2	mg/L

ND means none detected at or above the detection limit listed.

Larval Fish Growth and Survival Test-96 Hr Survival

Start Date:	10/8/02	Test ID:	A21007T	Sample ID:	WACKER SIL
End Date:	10/15/02	Lab ID:	COFFEY LAB	Sample Type:	EFF2-Industrial
Sample Date:	10/6/02	Protocol:	EPAF 91-EPA Freshwater	Test Species:	PP-Pimephales promelas
Comments:					

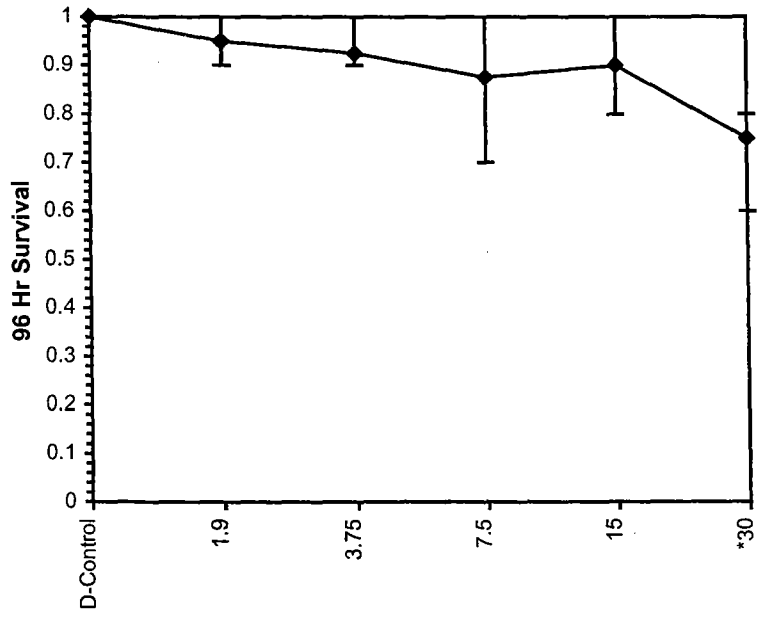
Conc-%	1	2	3	4
D-Control	1.0000	1.0000	1.0000	1.0000
1.9	0.9000	1.0000	0.9000	1.0000
3.75	1.0000	0.9000	0.9000	0.9000
7.5	0.9000	0.7000	1.0000	0.9000
15	0.9000	0.9000	1.0000	0.8000
30	0.8000	0.6000	0.8000	0.8000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
D-Control	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	4		
1.9	0.9500	0.9500	1.3305	1.2490	1.4120	7.072	4	14.00	10.00
3.75	0.9250	0.9250	1.2898	1.2490	1.4120	6.318	4	12.00	10.00
7.5	0.8750	0.8750	1.2253	0.9912	1.4120	14.199	4	12.00	10.00
15	0.9000	0.9000	1.2543	1.1071	1.4120	9.935	4	12.00	10.00
*30	0.7500	0.7500	1.0519	0.8861	1.1071	10.508	4	10.00	10.00

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.96931	0.884	-0.4041	0.55786
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Steel's Many-One Rank Test	15	30	21.2132	6.66667

Dose-Response Plot



 ToxCalc v5.0.23 Reviewed by:_____

SCOEPA00018806

Larval Fish Growth and Survival Test-7 Day Survival

Start Date:	10/8/02	Test ID:	A21007T	Sample ID:	WACKER SIL
End Date:	10/15/02	Lab ID:	COFFEY LAB	Sample Type:	EFF2-Industrial
Sample Date:	10/6/02	Protocol:	EPAF 91-EPA Freshwater	Test Species:	PP-Pimephales promelas
Comments:					

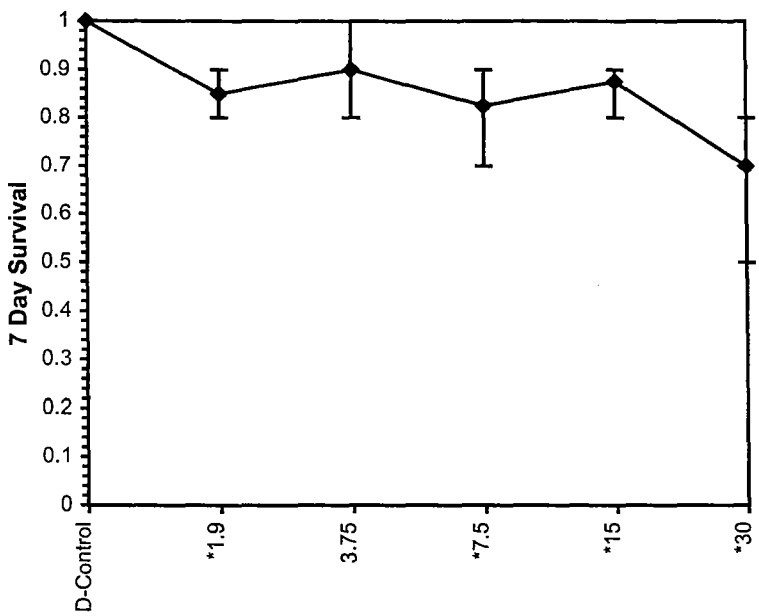
Conc-%	1	2	3	4
D-Control	1.0000	1.0000	1.0000	1.0000
1.9	0.9000	0.8000	0.9000	0.8000
3.75	1.0000	0.9000	0.8000	0.9000
7.5	0.9000	0.7000	0.9000	0.8000
15	0.9000	0.9000	0.9000	0.8000
30	0.8000	0.5000	0.8000	0.7000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
D-Control	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	4		
*1.9	0.8500	0.8500	1.1781	1.1071	1.2490	6.954	4	10.00	10.00
3.75	0.9000	0.9000	1.2543	1.1071	1.4120	9.935	4	12.00	10.00
*7.5	0.8250	0.8250	1.1491	0.9912	1.2490	10.856	4	10.00	10.00
*15	0.8750	0.8750	1.2136	1.1071	1.2490	5.846	4	10.00	10.00
*30	0.7000	0.7000	0.9977	0.7854	1.1071	15.209	4	10.00	10.00

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.95674	0.884	-0.5542	-0.0179
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Steel's Many-One Rank Test	<1.9	1.9		

Dose-Response Plot



 ToxCalc v5.0.23 Reviewed by:_____

SCOEPA00018807

Larval Fish Growth and Survival Test-7 Day Growth

Start Date:	10/8/02	Test ID:	A21007T	Sample ID:	WACKER SIL
End Date:	10/15/02	Lab ID:	COFFEY LAB	Sample Type:	EFF2-Industrial
Sample Date:	10/6/02	Protocol:	EPAF 91-EPA Freshwater	Test Species:	PP-Pimephales promelas
Comments:					

Conc-%	1	2	3	4
D-Control	0.5600	0.6300	0.5390	0.4670
1.9	0.4620	0.4390	0.4480	0.3330
3.75	0.4670	0.3800	0.4490	0.4860
7.5	0.5880	0.4160	0.4770	0.4880
15	0.5290	0.5670	0.5760	0.4610
30	0.5020	0.2560	0.4450	0.2980

			Transform: Untransformed						1-Tailed		Isotonic	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD	Mean	N-Mean
D-Control	0.5490	1.0000	0.5490	0.4670	0.6300	12.222	4				0.5490	1.0000
*1.9	0.4205	0.7659	0.4205	0.3330	0.4620	14.054	4	2.502	2.410	0.1238	0.4729	0.8613
3.75	0.4455	0.8115	0.4455	0.3800	0.4860	10.372	4	2.015	2.410	0.1238	0.4729	0.8613
7.5	0.4922	0.8966	0.4922	0.4160	0.5880	14.476	4	1.105	2.410	0.1238	0.4729	0.8613
15	0.5333	0.9713	0.5333	0.4610	0.5760	9.807	4	0.307	2.410	0.1238	0.4729	0.8613
*30	0.3753	0.6835	0.3753	0.2560	0.5020	31.199	4	3.383	2.410	0.1238	0.3753	0.6835

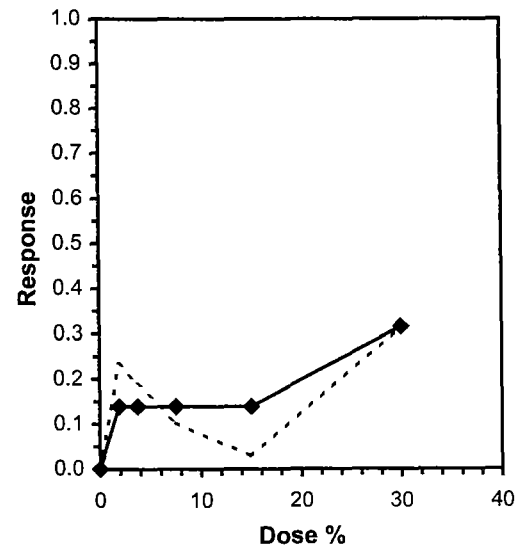
Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.96257	0.884	-0.0727	-0.6474
Bartlett's Test indicates equal variances (p = 0.67)	3.22715	15.0863		

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU	MSDu	MSDp	MSB	MSE	F-Prob	df
Dunnett's Test	<1.9	1.9			0.12377	0.22544	0.01821	0.00527	0.02314	5, 18

Linear Interpolation (200 Resamples)

Point	%	SD	95% CL(Exp)	Skew
IC05*	0.685			
IC10*	1.370			
IC15	15.956			
IC20	20.174			
IC25	24.392			
IC40	>30			
IC50	>30			

* indicates IC estimate less than the lowest concentration



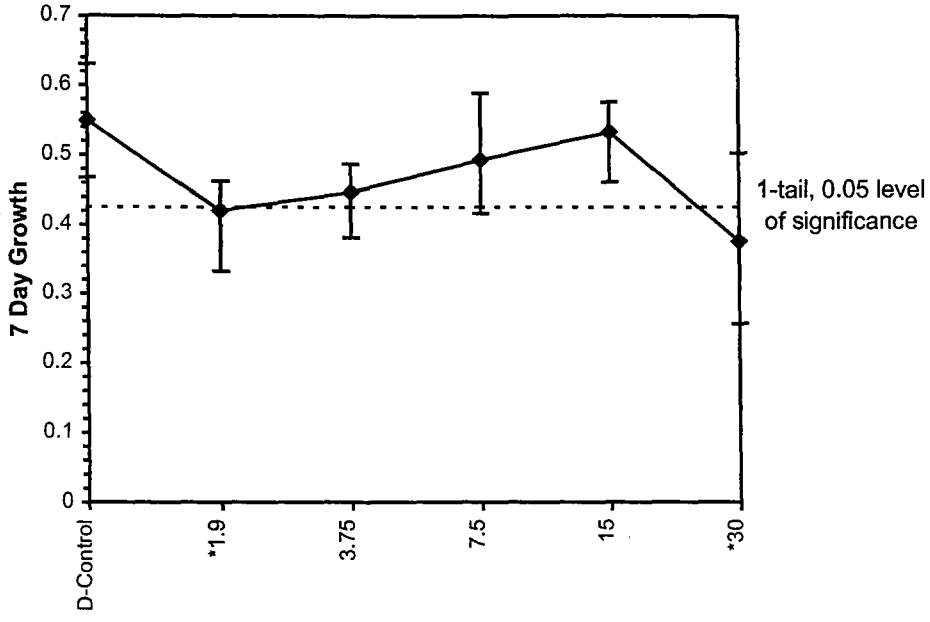
 ToxCalc v5.0.23 Reviewed by:_____

SCOEPA00018808

Larval Fish Growth and Survival Test-7 Day Growth

Start Date:	10/8/02	Test ID:	A21007T	Sample ID:	WACKER SIL
End Date:	10/15/02	Lab ID:	COFFEY LAB	Sample Type:	EFF2-Industrial
Sample Date:	10/6/02	Protocol:	EPAF 91-EPA Freshwater	Test Species:	PP-Pimephales promelas
Comments:					

Dose-Response Plot



ToxCalc v5.0.23

Reviewed by:_____

SCOEPA00018809

Ceriodaphnia Survival and Reproduction Test-7 Day Survival

Start Date:	10/8/02	Test ID:	A21007T	Sample ID:	WACKER SIL
End Date:	10/15/02	Lab ID:	COFFEY LAB	Sample Type:	EFF2-Industrial
Sample Date:	10/6/02	Protocol:	EPAF 91-EPA Freshwater	Test Species:	CD-Ceriodaphnia dubia
Comments:					

Conc-%	1	2	3	4	5	6	7	8	9	10
D-Control	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	0.0000	1.0000	1.0000
1.9	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	0.0000	1.0000	1.0000	1.0000
3.75	1.0000	0.0000	1.0000	0.0000	0.0000	1.0000	0.0000	0.0000	1.0000	0.0000
7.5	1.0000	0.0000	0.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000
15	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	0.0000	1.0000	1.0000
30	1.0000	0.0000	0.0000	0.0000	1.0000	0.0000	1.0000	0.0000	0.0000	1.0000

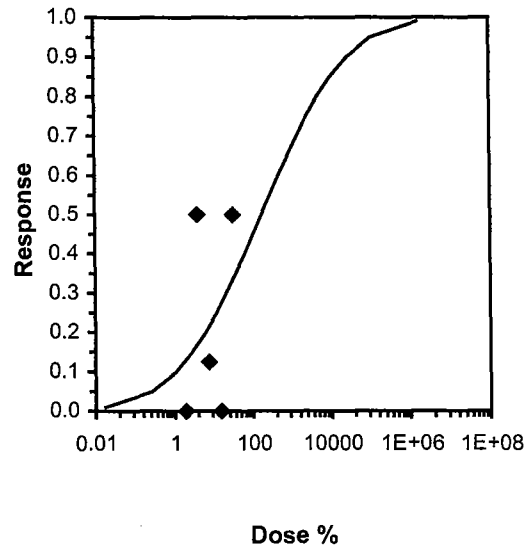
Conc-%	Mean	N-Mean	Resp	Not Resp	Total	N	Fisher's Exact P	1-Tailed Critical	Number Resp	Total Number
D-Control	0.8000	1.0000	2	8	10	10			2	10
1.9	0.8000	1.0000	2	8	10	10	0.7090	0.0500	2	10
3.75	0.4000	0.5000	6	4	10	10	0.0849	0.0500	6	10
7.5	0.7000	0.8750	3	7	10	10	0.5000	0.0500	3	10
15	0.8000	1.0000	2	8	10	10	0.7090	0.0500	2	10
30	0.4000	0.5000	6	4	10	10	0.0849	0.0500	6	10

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Fisher's Exact Test	30	>30		3.33333

Maximum Likelihood-Probit

Parameter	Value	SE	95% Fiducial Limits		Control	Chi-Sq	Critical	P-value	Mu	Sigma	Iter
Slope	0.58459	0.78145	-0.9471	2.11623	0.2	6.5407	7.81472	0.09	2.22376	1.7106	4
Intercept	3.70001	0.93629	1.86489	5.53514							
TSCR	0.20227	0.12668	-0.046	0.45056							

Point	Probits	%	95% Fiducial Limits
EC01	2.674	0.01755	
EC05	3.355	0.25708	
EC10	3.718	1.07532	
EC15	3.964	2.82381	
EC20	4.158	6.08249	
EC25	4.326	11.7483	
EC40	4.747	61.7139	
EC50	5.000	167.401	
EC60	5.253	454.081	
EC75	5.674	2385.28	
EC80	5.842	4607.17	
EC85	6.036	9923.85	
EC90	6.282	26060.3	
EC95	6.645	109004	
EC99	7.326	1596641	



ToxCalc v5.0.23

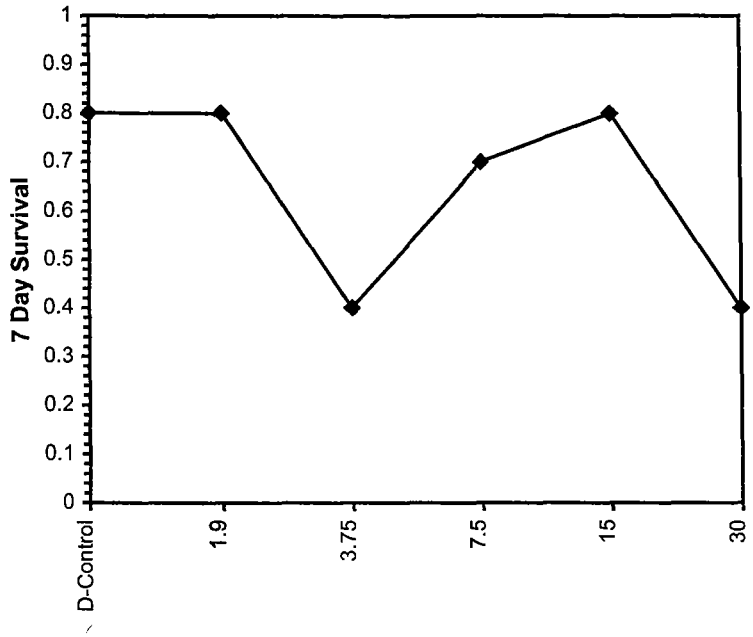
Reviewed by:_____

SCOEPA00018810

Ceriodaphnia Survival and Reproduction Test-7 Day Survival

Start Date:	10/8/02	Test ID:	A21007T	Sample ID:	WACKER SIL
End Date:	10/15/02	Lab ID:	COFFEY LAB	Sample Type:	EFF2-Industrial
Sample Date:	10/6/02	Protocol:	EPAF 91-EPA Freshwater	Test Species:	CD-Ceriodaphnia dubia
Comments:					

Dose-Response Plot



ToxCalc v5.0.23

Reviewed by:_____

SCOEPA00018811

Ceriodaphnia Survival and Reproduction Test-Reproduction

Start Date:	10/8/02	Test ID:	A21007T	Sample ID:	WACKER SIL
End Date:	10/15/02	Lab ID:	COFFEY LAB	Sample Type:	EFF2-Industrial
Sample Date:	10/6/02	Protocol:	EPAF 91-EPA Freshwater	Test Species:	CD-Ceriodaphnia dubia
Comments:					

Conc-%	1	2	3	4	5	6	7	8	9	10
D-Control	31.000	33.000	34.000	29.000	0.000	31.000	28.000	0.000	30.000	29.000
1.9	4.000	5.000	0.000	0.000	0.000	1.000	0.000	2.000	0.000	0.000
3.75	5.000	0.000	7.000	0.000	5.000	0.000	0.000	0.000	0.000	0.000
7.5	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000	0.000	0.000
15	1.000	0.000	1.000	1.000	0.000	2.000	1.000	0.000	0.000	0.000
30	0.000	0.000	0.000	0.000	1.000	2.000	0.000	0.000	0.000	0.000

			Transform: Untransformed					Rank	1-Tailed	Isotonic	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical	Mean	N-Mean
D-Control	24.500	1.0000	24.5000	0.0000	34.0000	53.227	10			24.500	1.0000
*1.9	1.200	0.0490	1.2000	0.0000	5.0000	156.150	10	69.00	75.00	1.450	0.0592
*3.75	1.700	0.0694	1.7000	0.0000	7.0000	164.168	10	68.00	75.00	1.450	0.0592
*7.5	0.100	0.0041	0.1000	0.0000	1.0000	316.228	10	66.00	75.00	0.350	0.0143
*15	0.600	0.0245	0.6000	0.0000	2.0000	116.534	10	70.00	75.00	0.350	0.0143
*30	0.300	0.0122	0.3000	0.0000	2.0000	224.983	10	67.00	75.00	0.300	0.0122

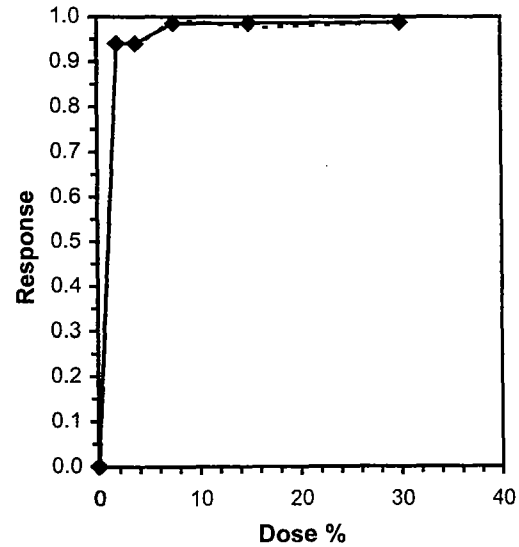
Auxiliary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test indicates non-normal distribution (p <= 0.01)	2.66977	1.035	-3.1944	14.7967
Bartlett's Test indicates unequal variances (p = 8.95E-28)	136.71	15.0863		

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Steel's Many-One Rank Test	<1.9	1.9		

Linear Interpolation (200 Resamples)

Point	%	SD	95% CL		Skew
IC05*	0.1010	0.0025	0.0979	0.1078	0.8996
IC10*	0.2020	0.0049	0.1958	0.2156	0.8996
IC15*	0.3029	0.0074	0.2936	0.3234	0.8996
IC20*	0.4039	0.0099	0.3915	0.4313	0.8996
IC25*	0.5049	0.0124	0.4894	0.5391	0.8996
IC40*	0.8078	0.0198	0.7830	0.8625	0.8996
IC50*	1.0098	0.0247	0.9788	1.0782	0.8996

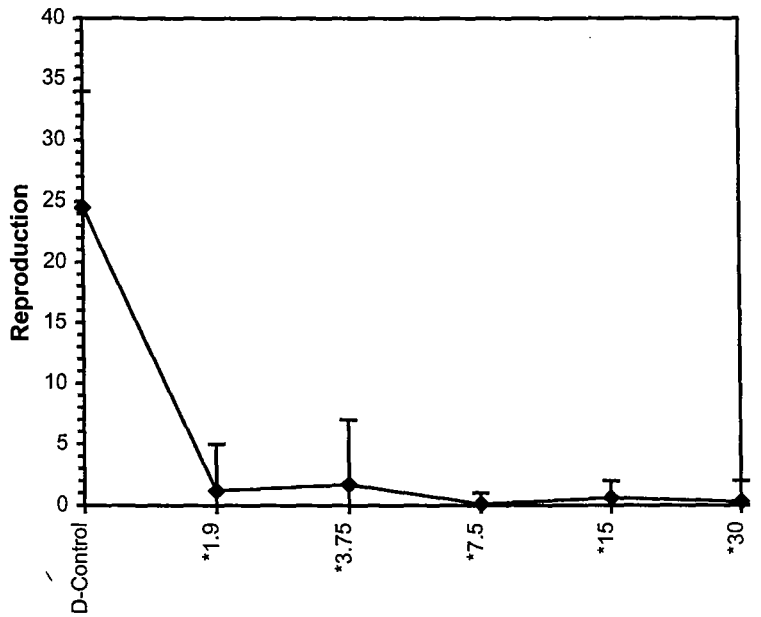
* indicates IC estimate less than the lowest concentration



Ceriodaphnia Survival and Reproduction Test-Reproduction

Start Date:	10/8/02	Test ID:	A21007T	Sample ID:	WACKER SIL
End Date:	10/15/02	Lab ID:	COFFEY LAB	Sample Type:	EFF2-Industrial
Sample Date:	10/6/02	Protocol:	EPAF 91-EPA Freshwater	Test Species:	CD-Ceriodaphnia dubia
Comments:					

Dose-Response Plot



ToxCalc v5.0.23

Reviewed by:_____

SCOEPA00018813

Acute Fish Test-48 Hr Survival

Start Date:	10/8/02	Test ID:	A21007Tca	Sample ID:	Wacker
End Date:	10/12/02	Lab ID:	COFFEY LAB	Sample Type:	EFF2-Industrial
Sample Date:		Protocol:	EPAA 91-EPA Acute	Test Species:	CD-Ceriodaphnia dubia
Comments:	Acute				

Conc-%	1	2	3	4
D-Control	1.0000	1.0000	1.0000	1.0000
1.9	1.0000	1.0000	1.0000	1.0000
3.75	0.6000	1.0000	0.8000	1.0000
7.5	0.6000	1.0000	0.8000	1.0000
15	0.2000	0.8000	0.4000	0.2000
30	0.2000	0.2000	0.4000	0.2000

			Transform: Arcsin Square Root					Rank	1-Tailed		Number	Total
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical		Resp	Number
D-Control	1.0000	1.0000	1.3453	1.3453	1.3453	0.000	4				0	20
1.9	1.0000	1.0000	1.3453	1.3453	1.3453	0.000	4	18.00	10.00		0	20
3.75	0.8500	0.8500	1.1709	0.8861	1.3453	18.840	4	14.00	10.00		3	20
7.5	0.8500	0.8500	1.1709	0.8861	1.3453	18.840	4	14.00	10.00		3	20
*15	0.4000	0.4000	0.6798	0.4636	1.1071	44.627	4	10.00	10.00		12	20
*30	0.2500	0.2500	0.5189	0.4636	0.6847	21.301	4	10.00	10.00		15	20

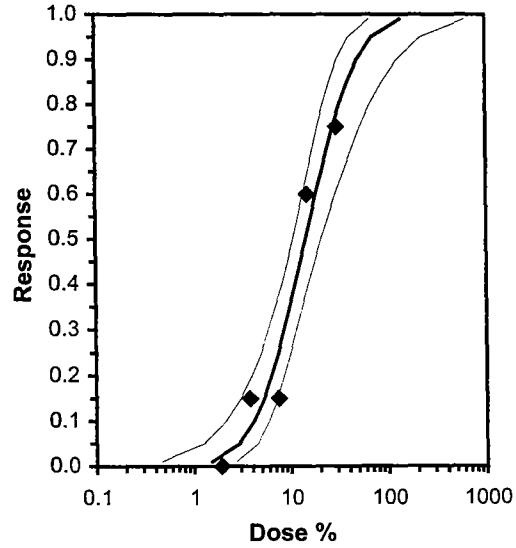
Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.90726	0.884	0.40433	1.08977
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Steel's Many-One Rank Test	7.5	15	10.6066	13.3333

Maximum Likelihood-Probit

Parameter	Value	SE	95% Fiducial Limits		Control	Chi-Sq	Critical	P-value	Mu	Sigma	Iter
Slope	2.37033	0.44042	1.5071	3.23356	0	3.25425	7.81472	0.35	1.15695	0.42188	3
Intercept	2.25764	0.48162	1.31366	3.20162							
TSCR											

Point	Probits	%	95% Fiducial Limits	
EC01	2.674	1.49799	0.45451	2.69303
EC05	3.355	2.90415	1.25495	4.48849
EC10	3.718	4.13323	2.1332	5.95811
EC15	3.964	5.24446	3.02495	7.27557
EC20	4.158	6.33707	3.96019	8.59764
EC25	4.326	7.45415	4.94786	10.006
EC40	4.747	11.222	8.23173	15.4478
EC50	5.000	14.3534	10.7089	20.9442
EC60	5.253	18.3584	13.5507	29.1943
EC75	5.674	27.6381	19.2886	52.6791
EC80	5.842	32.5101	22.0189	67.1008
EC85	6.036	39.2831	25.6072	89.2625
EC90	6.282	49.8445	30.8534	128.285
EC95	6.645	70.9394	40.473	220.661
EC99	7.326	137.53	66.7495	615.728



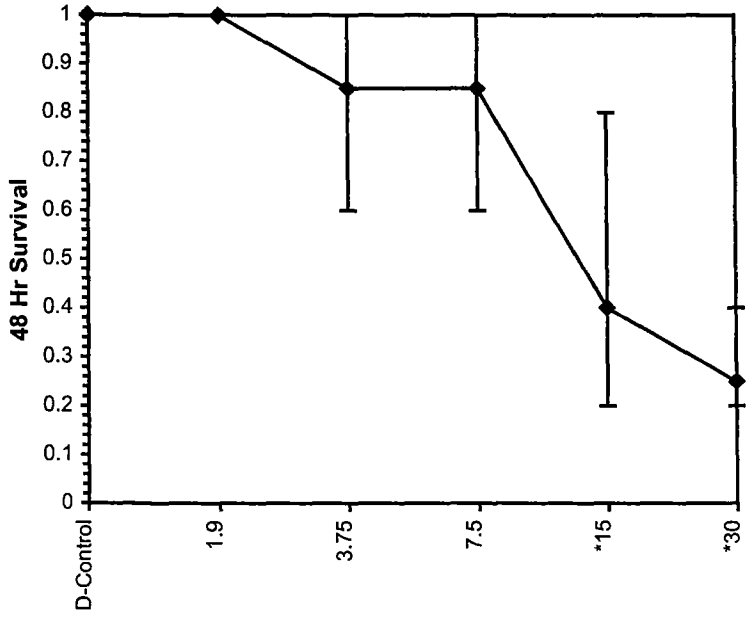
 ToxCalc v5.0.23 Reviewed by:_____

SCOEPA00018814

Acute Fish Test-48 Hr Survival

Start Date:	10/8/02	Test ID:	A21007Tca	Sample ID:	Wacker
End Date:	10/12/02	Lab ID:	COFFEY LAB	Sample Type:	EFF2-Industrial
Sample Date:		Protocol:	EPAA 91-EPA Acute	Test Species:	CD-Ceriodaphnia dubia
Comments:	Acute				

Dose-Response Plot



ToxCalc v5.0.23

Reviewed by:_____

Acute Fish Test-48 Hr Survival

Start Date:	10/8/02	Test ID:	OctRefTxA	Sample ID:	REF-Ref Toxicant
End Date:	10/12/02	Lab ID:	COFFEY LAB	Sample Type:	NACL-Sodium chloride
Sample Date:		Protocol:	EPAA 91-EPA Acute	Test Species:	CD-Ceriodaphnia dubia
Comments:	Acute				

Conc-%	1	2	3	4
D-Control	1.0000	1.0000	1.0000	1.0000
1	1.0000	1.0000	1.0000	1.0000
2.5	1.0000	0.8000	1.0000	1.0000
4	1.0000	0.8000	1.0000	1.0000
5.5	0.0000	0.2000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000

			Transform: Arcsin Square Root					Rank	1-Tailed		Number	Total
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical		Resp	Number
D-Control	1.0000	1.0000	1.3453	1.3453	1.3453	0.000	4				0	20
1	1.0000	1.0000	1.3453	1.3453	1.3453	0.000	4	18.00	10.00		0	20
2.5	0.9500	0.9500	1.2857	1.1071	1.3453	9.261	4	16.00	10.00		1	20
4	0.9500	0.9500	1.2857	1.1071	1.3453	9.261	4	16.00	10.00		1	20
*5.5	0.0500	0.0500	0.2850	0.2255	0.4636	41.771	4	10.00	10.00		19	20
8	0.0000	0.0000	0.2255	0.2255	0.2255	0.000	4				20	20

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.87944	0.868	-0.5381	1.53159
Equality of variance cannot be confirmed				

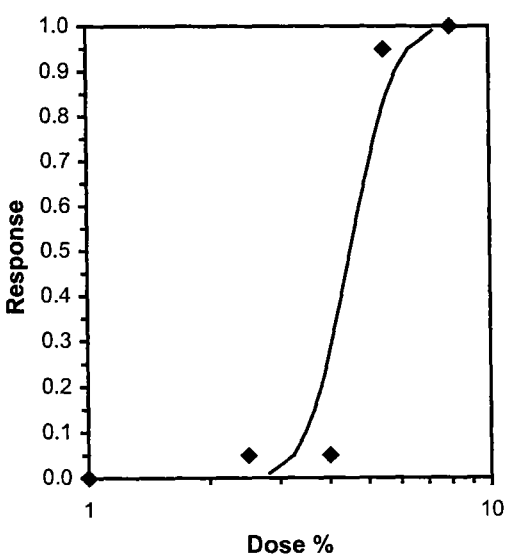
Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Steel's Many-One Rank Test	4	5.5	4.69042	25

Maximum Likelihood-Probit

Parameter	Value	SE	95% Fiducial Limits		Control	Chi-Sq	Critical	P-value	Mu	Sigma	Iter
Slope	11.326	8.62056	-16.108	38.7605	0	33.1988	7.81472	2.9E-07	0.65529	0.08829	8
Intercept	-2.4219	5.77657	-20.805	15.9618							
TSCR											

Point	Probits	%	95% Fiducial Limits
EC01	2.674	2.81769	
EC05	3.355	3.23641	
EC10	3.718	3.4845	
EC15	3.964	3.66254	
EC20	4.158	3.81051	
EC25	4.326	3.94221	
EC40	4.747	4.29461	
EC50	5.000	4.5216	
EC60	5.253	4.76059	
EC75	5.674	5.18614	
EC80	5.842	5.36538	
EC85	6.036	5.58214	
EC90	6.282	5.86736	
EC95	6.645	6.31713	
EC99	7.326	7.25589	

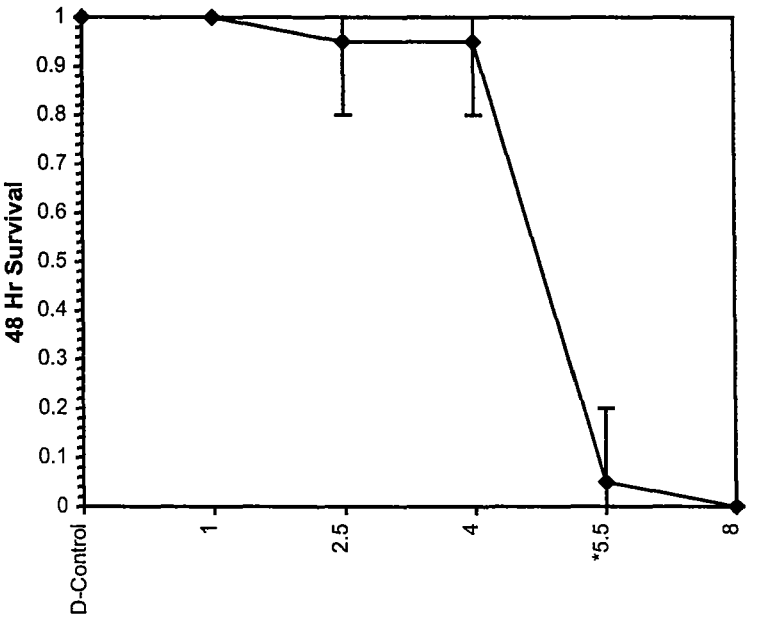
Significant heterogeneity detected (p = 2.92E-07)



Acute Fish Test-48 Hr Survival

Start Date:	10/8/02	Test ID:	OctRefTxA	Sample ID:	REF-Ref Toxicant
End Date:	10/12/02	Lab ID:	COFFEY LAB	Sample Type:	NACL-Sodium chloride
Sample Date:		Protocol:	EPAA 91-EPA Acute	Test Species:	CD-Ceriodaphnia dubia
Comments:	Acute				

Dose-Response Plot



ToxCalc v5.0.23

Reviewed by:_____

SCOEPA00018817

Ceriodaphnia Survival and Reproduction Test-7 Day Survival

Start Date:	10/8/02	Test ID:	OctRefToxC	Sample ID:	REF-Ref Toxicant
End Date:	10/15/02	Lab ID:	COFFEY LAB	Sample Type:	NACL-Sodium chloride
Sample Date:	10/6/02	Protocol:	EPAF 91-EPA Freshwater	Test Species:	CD-Ceriodaphnia dubia
Comments:					

Conc-%	1	2	3	4	5	6	7	8	9	10
D-Control	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000
2.5	0.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000
4	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
5.5	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Conc-%	Mean	N-Mean	Resp	Not Resp	Total	N	Fisher's Exact P	1-Tailed Critical	Number Resp	Total Number
D-Control	1.0000	1.0000	0	10	10	10			0	10
1	0.9000	0.9000	1	9	10	10	0.5000	0.0500	1	10
2.5	0.8000	0.8000	2	8	10	10	0.2368	0.0500	2	10
4	0.9000	0.9000	1	9	10	10	0.5000	0.0500	1	10
*5.5	0.1000	0.1000	9	1	10	10	0.0001	0.0500	9	10
8	0.0000	0.0000	10	0	10	10			10	10

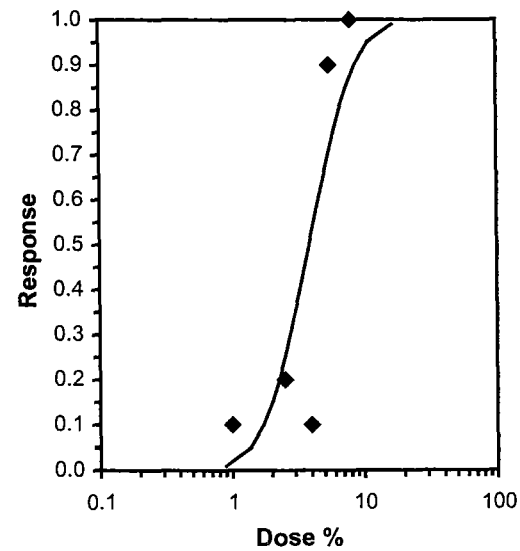
Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Fisher's Exact Test	4	5.5	4.69042	25

Maximum Likelihood-Probit

Parameter	Value	SE	95% Fiducial Limits		Control	Chi-Sq	Critical	P-value	Mu	Sigma	Iter
Slope	3.6591	2.1781	-3.2726	10.5908	0	14.8796	7.81472	1.9E-03	0.58576	0.27329	5
Intercept	2.85664	1.41535	-1.6476	7.36092							
TSCR											

Point	Probits	%	95% Fiducial Limits
EC01	2.674	0.89123	
EC05	3.355	1.36847	
EC10	3.718	1.71998	
EC15	3.964	2.00684	
EC20	4.158	2.26858	
EC25	4.326	2.52016	
EC40	4.747	3.28491	
EC50	5.000	3.85267	
EC60	5.253	4.51855	
EC75	5.674	5.88971	
EC80	5.842	6.54288	
EC85	6.036	7.39622	
EC90	6.282	8.62975	
EC95	6.645	10.8464	
EC99	7.326	16.6545	

Significant heterogeneity detected (p = 1.92E-03)



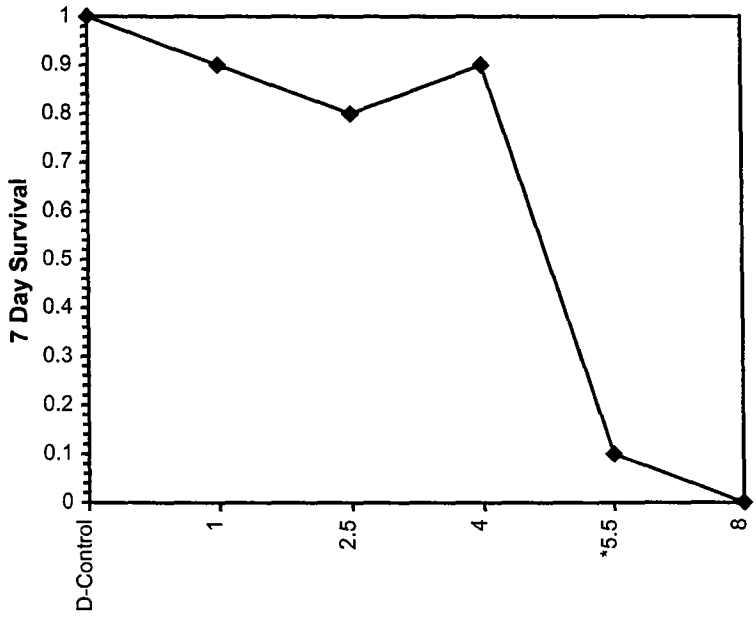
 ToxCalc v5.0.23 Reviewed by:_____

SCOEPA00018818

Ceriodaphnia Survival and Reproduction Test-7 Day Survival

Start Date:	10/8/02	Test ID:	OctRefToxC	Sample ID:	REF-Ref Toxicant
End Date:	10/15/02	Lab ID:	COFFEY LAB	Sample Type:	NACL-Sodium chloride
Sample Date:	10/6/02	Protocol:	EPAF 91-EPA Freshwater	Test Species:	CD-Ceriodaphnia dubia
Comments:					

Dose-Response Plot



ToxCalc v5.0.23

Reviewed by:_____

Ceriodaphnia Survival and Reproduction Test-Reproduction

Start Date:	10/8/02	Test ID:	OctRefToxC	Sample ID:	REF-Ref Toxicant
End Date:	10/15/02	Lab ID:	COFFEY LAB	Sample Type:	NACL-Sodium chloride
Sample Date:	10/6/02	Protocol:	EPAF 91-EPA Freshwater	Test Species:	CD-Ceriodaphnia dubia
Comments:					

Conc-%	1	2	3	4	5	6	7	8	9	10
D-Control	30.000	32.000	34.000	23.000	28.000	32.000	27.000	34.000	32.000	24.000
1	14.000	16.000	9.000	25.000	0.000	14.000	16.000	0.000	1.000	8.000
2.5	0.000	0.000	8.000	0.000	0.000	0.000	0.000	0.000	7.000	0.000
4	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
8	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

			Transform: Untransformed						1-Tailed		Isotonic	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD	Mean	N-Mean
D-Control	29.600	1.0000	29.600	23.000	34.000	13.344	10				29.600	1.0000
*1	10.300	0.3480	10.300	0.000	25.000	80.198	10	7.714	1.999	5.001	10.300	0.3480
*2.5	1.500	0.0507	1.500	0.000	8.000	211.403	10	11.232	1.999	5.001	1.500	0.0507
4	0.000	0.0000	0.000	0.000	0.000	0.000	10				0.000	0.0000
5.5	0.000	0.0000	0.000	0.000	0.000	0.000	10				0.000	0.0000
8	0.000	0.0000	0.000	0.000	0.000	0.000	10				0.000	0.0000

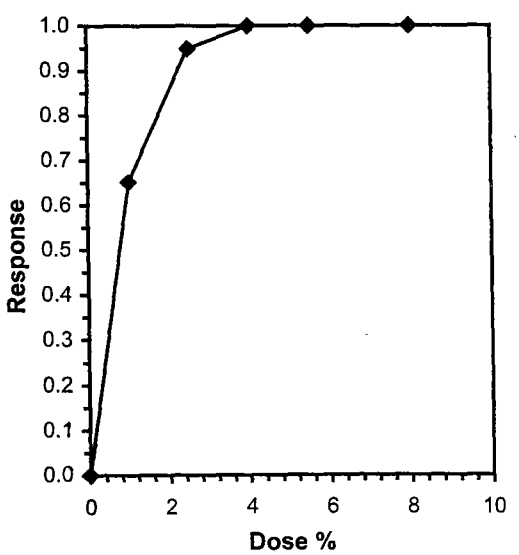
Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.94094	0.9	0.18443	0.94577
Bartlett's Test indicates equal variances (p = 0.01)	9.0239	9.21035		

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU	MSDu	MSDp	MSB	MSE	F-Prob	df
Dunnett's Test	<1	1			5.00092	0.16895	2065.9	31.2963	4.0E-11	2, 27

Linear Interpolation (200 Resamples)

Point	%	SD	95% CL		Skew
IC05*	0.0767	0.0108	0.0630	0.1052	0.8425
IC10*	0.1534	0.0215	0.1261	0.2104	0.8425
IC15*	0.2301	0.0323	0.1891	0.3156	0.8425
IC20*	0.3067	0.0430	0.2522	0.4208	0.8425
IC25*	0.3834	0.0538	0.3152	0.5259	0.8425
IC40*	0.6135	0.0861	0.5044	0.8415	0.8425
IC50*	0.7668	0.1110	0.6305	1.0706	0.9959

* indicates IC estimate less than the lowest concentration



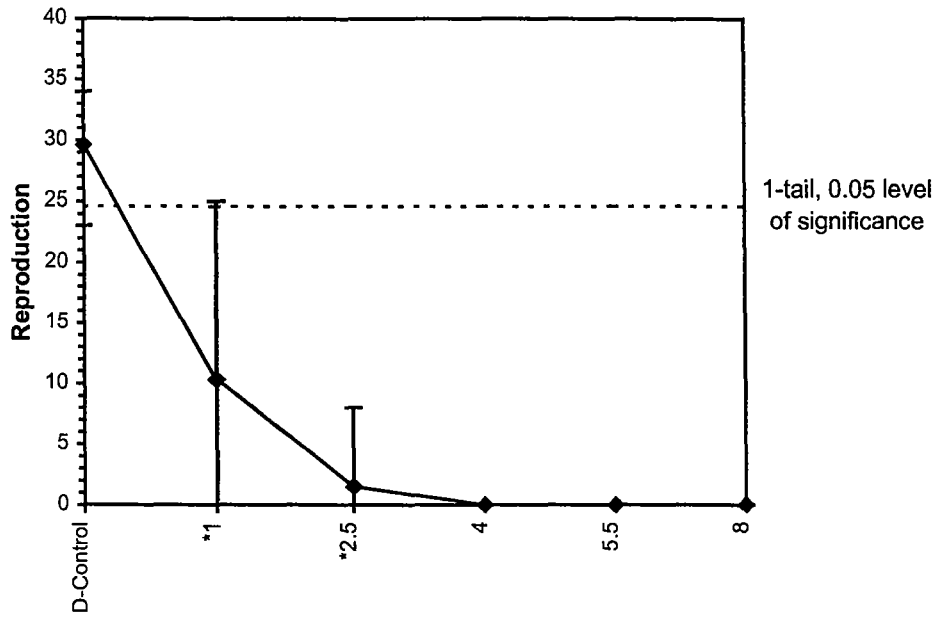
 ToxCalc v5.0.23 Reviewed by:_____

SCOEPA00018820

Ceriodaphnia Survival and Reproduction Test-Reproduction

Start Date:	10/8/02	Test ID:	OctRefToxC	Sample ID:	REF-Ref Toxicant
End Date:	10/15/02	Lab ID:	COFFEY LAB	Sample Type:	NACL-Sodium chloride
Sample Date:	10/6/02	Protocol:	EPAF 91-EPA Freshwater	Test Species:	CD-Ceriodaphnia dubia
Comments:					

Dose-Response Plot



ToxCalc v5.0.23

Reviewed by:_____

SCOEPA00018821

Larval Fish Growth and Survival Test-96 Hr Survival

Start Date:	10/8/02	Test ID:	OctRefToxF	Sample ID:	REF-Ref Toxicant
End Date:	10/15/02	Lab ID:	COFFEY LAB	Sample Type:	NACL-Sodium chloride
Sample Date:	10/6/02	Protocol:	EPAF 91-EPA Freshwater	Test Species:	PP-Pimephales promelas
Comments:					

Conc-%	1	2	3	4
D-Control	1.0000	1.0000	1.0000	1.0000
1	1.0000	0.8000	1.0000	1.0000
2.5	0.9000	0.8000	1.0000	0.9000
4	0.7000	0.9000	0.9000	0.9000
5.5	0.7000	0.1000	0.4000	0.8000
8	0.0000	0.0000	0.0000	0.0000

			Transform: Arcsin Square Root					Rank	1-Tailed		Number	Total
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical		Resp	Number
D-Control	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	4				0	40
1	0.9500	0.9500	1.3358	1.1071	1.4120	11.411	4	16.00	10.00		2	40
2.5	0.9000	0.9000	1.2543	1.1071	1.4120	9.935	4	12.00	10.00		4	40
*4	0.8500	0.8500	1.1846	0.9912	1.2490	10.885	4	10.00	10.00		6	40
*5.5	0.5000	0.5000	0.7762	0.3218	1.1071	45.283	4	10.00	10.00		20	40
8	0.0000	0.0000	0.1588	0.1588	0.1588	0.000	4				40	40

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.92434	0.868	-0.7974	2.09237
Equality of variance cannot be confirmed				

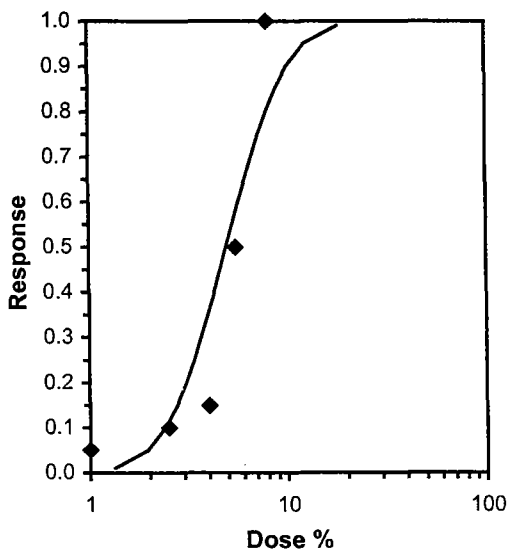
Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Steel's Many-One Rank Test	2.5	4	3.16228	40

Maximum Likelihood-Probit

Parameter	Value	SE	95% Fiducial Limits		Control	Chi-Sq	Critical	P-value	Mu	Sigma	Iter
Slope	4.10123	2.64133	-4.3047	12.5071	0	58.1389	7.81472	1.5E-12	0.69175	0.24383	6
Intercept	2.16299	1.83354	-3.6722	7.99813							
TSCR											

Point	Probits	%	95% Fiducial Limits
EC01	2.674	1.33203	
EC05	3.355	1.95291	
EC10	3.718	2.39479	
EC15	3.964	2.74811	
EC20	4.158	3.06573	
EC25	4.326	3.36733	
EC40	4.747	4.26553	
EC50	5.000	4.91752	
EC60	5.253	5.66918	
EC75	5.674	7.18137	
EC80	5.842	7.88785	
EC85	6.036	8.79953	
EC90	6.282	10.0978	
EC95	6.645	12.3826	
EC99	7.326	18.1543	

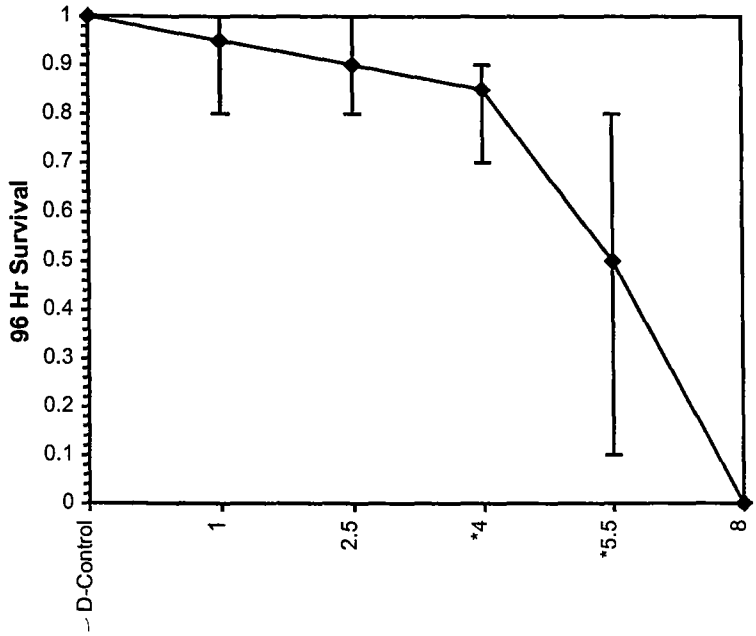
Significant heterogeneity detected (p = 1.47E-12)



Larval Fish Growth and Survival Test-96 Hr Survival

Start Date:	10/8/02	Test ID:	OctRefToxF	Sample ID:	REF-Ref Toxicant
End Date:	10/15/02	Lab ID:	COFFEY LAB	Sample Type:	NACL-Sodium chloride
Sample Date:	10/6/02	Protocol:	EPAF 91-EPA Freshwater	Test Species:	PP-Pimephales promelas
Comments:					

Dose-Response Plot



ToxCalc v5.0.23

Reviewed by:_____

Larval Fish Growth and Survival Test-7 Day Survival

Start Date:	10/8/02	Test ID:	OctRefToxF	Sample ID:	REF-Ref Toxicant
End Date:	10/15/02	Lab ID:	COFFEY LAB	Sample Type:	NACL-Sodium chloride
Sample Date:	10/6/02	Protocol:	EPAF 91-EPA Freshwater	Test Species:	PP-Pimephales promelas
Comments:					

Conc-%	1	2	3	4
D-Control	1.0000	1.0000	1.0000	1.0000
1	1.0000	0.7000	1.0000	1.0000
2.5	0.8000	0.4000	0.5000	0.6000
4	0.3000	0.5000	0.1000	0.4000
5.5	0.3000	0.0000	0.0000	0.5000
8	0.0000	0.0000	0.0000	0.0000

			Transform: Arcsin Square Root					Rank	1-Tailed		Number	Total
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical		Resp	Number
D-Control	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	4				0	40
1	0.9250	0.9250	1.3068	0.9912	1.4120	16.103	4	16.00	10.00		3	40
*2.5	0.5750	0.5750	0.8658	0.6847	1.1071	20.865	4	10.00	10.00		17	40
*4	0.3250	0.3250	0.5929	0.3218	0.7854	33.619	4	10.00	10.00		27	40
*5.5	0.2000	0.2000	0.4206	0.1588	0.7854	74.606	4	10.00	10.00		32	40
8	0.0000	0.0000	0.1588	0.1588	0.1588	0.000	4				40	40

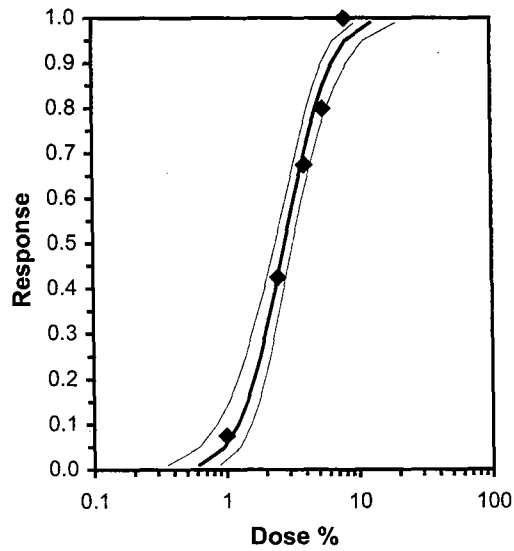
Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.95081	0.868	-0.1471	-0.4468
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Steel's Many-One Rank Test	1	2.5	1.58114	100

Maximum Likelihood-Probit

Parameter	Value	SE	95% Fiducial Limits		Control	Chi-Sq	Critical	P-value	Mu	Sigma	Iter
Slope	3.53965	0.43268	2.69159	4.38771	0	3.50189	7.81472	0.32	0.44759	0.28251	3
Intercept	3.41569	0.25513	2.91563	3.91575							
TSCR											

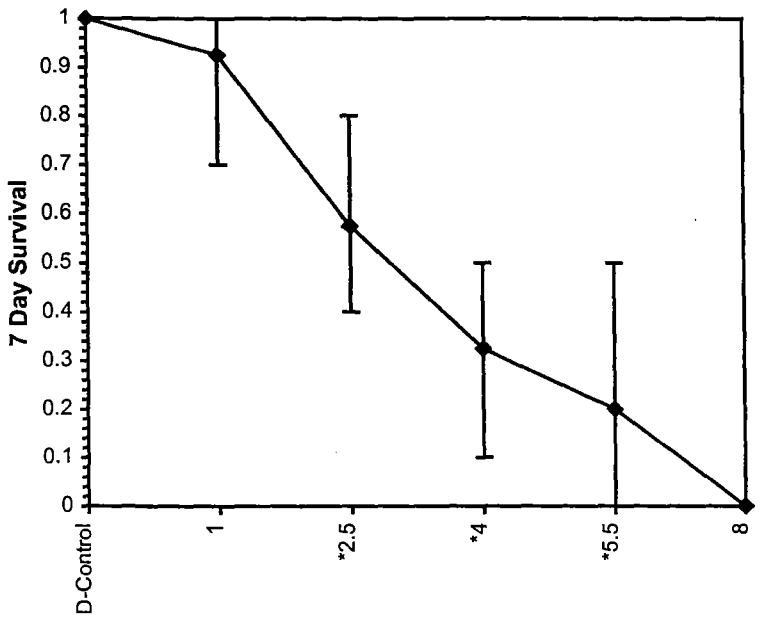
Point	Probits	%	95% Fiducial Limits	
EC01	2.674	0.61711	0.35186	0.87881
EC05	3.355	0.96138	0.62566	1.26602
EC10	3.718	1.21768	0.84845	1.54143
EC15	3.964	1.42818	1.04047	1.76301
EC20	4.158	1.62114	1.22204	1.96416
EC25	4.326	1.80732	1.4011	2.15764
EC40	4.747	2.37692	1.96135	2.75639
EC50	5.000	2.80278	2.37966	3.2229
EC60	5.253	3.30494	2.85784	3.80706
EC75	5.674	4.34652	3.77463	5.15469
EC80	5.842	4.84573	4.18212	5.85956
EC85	6.036	5.50043	4.69378	6.8315
EC90	6.282	6.45128	5.40312	8.32392
EC95	6.645	8.17116	6.61732	11.2219
EC99	7.326	12.7296	9.58459	19.8467



Larval Fish Growth and Survival Test-7 Day Survival

Start Date:	10/8/02	Test ID:	OctRefToxF	Sample ID:	REF-Ref Toxicant
End Date:	10/15/02	Lab ID:	COFFEY LAB	Sample Type:	NACL-Sodium chloride
Sample Date:	10/6/02	Protocol:	EPAF 91-EPA Freshwater	Test Species:	PP-Pimephales promelas
Comments:					

Dose-Response Plot



ToxCalc v5.0.23

Reviewed by:_____

SCOEPA00018825

Larval Fish Growth and Survival Test-7 Day Growth

Start Date:	10/8/02	Test ID:	OctRefToxF	Sample ID:	REF-Ref Toxicant
End Date:	10/15/02	Lab ID:	COFFEY LAB	Sample Type:	NACL-Sodium chloride
Sample Date:	10/6/02	Protocol:	EPAF 91-EPA Freshwater	Test Species:	PP-Pimephales promelas
Comments:					

Conc-%	1	2	3	4
D-Control	0.4100	0.5880	0.6910	0.5760
1	0.7370	0.3260	0.6320	0.5100
2.5	0.3820	0.1300	0.2980	0.2710
4	0.0770	0.2150	0.0060	0.1210
5.5	0.0710	0.0000	0.0000	0.0160
8	0.0000	0.0000	0.0000	0.0000

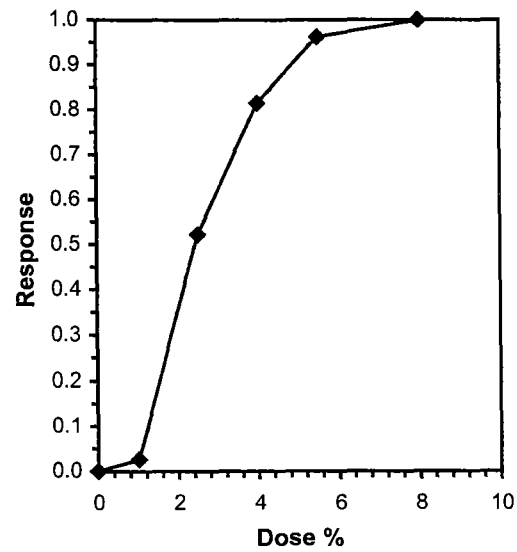
			Transform: Untransformed						1-Tailed		Isotonic	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD	Mean	N-Mean
D-Control	0.5662	1.0000	0.5662	0.4100	0.6910	20.530	4				0.5662	1.0000
1	0.5513	0.9735	0.5513	0.3260	0.7370	32.019	4	0.187	2.360	0.1894	0.5513	0.9735
*2.5	0.2703	0.4773	0.2703	0.1300	0.3820	38.767	4	3.688	2.360	0.1894	0.2703	0.4773
*4	0.1048	0.1850	0.1048	0.0060	0.2150	83.481	4	5.750	2.360	0.1894	0.1048	0.1850
*5.5	0.0218	0.0384	0.0218	0.0000	0.0710	154.890	4	6.784	2.360	0.1894	0.0218	0.0384
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.000	4				0.0000	0.0000

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.97009	0.868	-0.4166	0.25964
Bartlett's Test indicates equal variances (p = 0.22)	5.77364	13.2767		

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU	MSDu	MSDp	MSB	MSE	F-Prob	df
Dunnett's Test	1	2.5	1.58114	100	0.18943	0.33453	0.25041	0.01289	8.5E-06	4, 15

Linear Interpolation (200 Resamples)

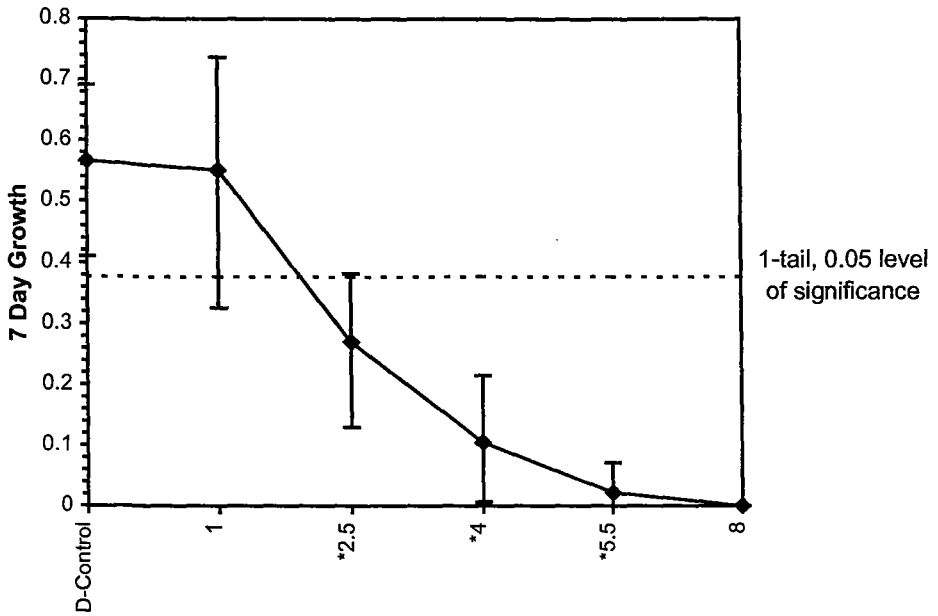
Point	%	SD	95% CL(Exp)		Skew
IC05	1.0711	0.3977	0.0000	1.2590	-0.5026
IC10	1.2222	0.3463	0.0000	1.4700	-0.8794
IC15	1.3733	0.3166	0.0000	1.6809	-1.0849
IC20	1.5245	0.3035	0.0277	1.8919	-1.1287
IC25	1.6756	0.2992	0.1726	2.1123	-1.0893
IC40	2.1290	0.2829	0.9765	2.8163	-0.3212
IC50	2.4313	0.2917	1.6053	3.2091	0.0927



Larval Fish Growth and Survival Test-7 Day Growth

Start Date:	10/8/02	Test ID:	OctRefToxF	Sample ID:	REF-Ref Toxicant
End Date:	10/15/02	Lab ID:	COFFEY LAB	Sample Type:	NACL-Sodium chloride
Sample Date:	10/6/02	Protocol:	EPAF 91-EPA Freshwater	Test Species:	PP-Pimephales promelas
Comments:					

Dose-Response Plot



ToxCalc v5.0.23

Reviewed by:_____

SCOEPA00018827

APPENDIX A

RAW DATA SHEETS

COFFEY LABORATORIES, INC.
12423 N.E. Whitaker Way • Portland, OR • 97230 • (503) 254-1794 • FAX (503) 254-1452

Doc ID: O:\Clom\Port.BRN\LifeSci.SEC\Forms\CRLarvQC.FOR
Revision #: 1.01
Revision Date: 11/18/93

CHRONIC RENEWAL LARVAE TOXICITY TEST - QUALITY ASSURANCE PARAMETERS

Project: A21007T
Lab: Wacker Silt
Source Name: CFT

Test Organism: F.H.M.
Dates Delivered: 10-7-9 11
Dates Collected: 10-6-8, 10

Test Initiation: 10-8-02
Test Conclusion: 10-15-02
Dechlorination:

Analyst(s): HRC/BWD
Reviewed by:

1/2

Conc.	Day	Date	Initials	pH New	pH Old	DO New	DO Old	Sp. Cond. New	Sp. Cond. Old	Alkalinity (mg/L)	Hardness (mg/L)	Ammonia (mg/L)	Chlorine (mg/L)
	0	10/8		7.70		8.0		480					
	1	10/9		7.72	7.86	8.0	7.8						
	2	10/10		7.36	7.70	8.1	7.0						
	3	10/11		[illegible]	[illegible]	7.20	7.40						
	4	10/12		927	812	8.4	7.7						
	5	10/13		6.36	790	8.2	7.4						
	6												
	7												
	0			7.92		7.9		353					
	1				7.87	7.9	8.0						
	2				7.63	8.4	6.5						
	3				[illegible]	7.90	7.20						
	4				794	88	76						
	5				796	82	72						
	6												
	7												
	0			7.94		8.0		378					
	1				[illegible]	8.0	8.1						
	2				7.66	8.1	6.6						
	3				7.85	7.4	7.3						
	4				789	87	79						
	5				794	81	71						
	6												
	7												
	0			7.95		8.0		392					
	1				7.87	8.0	8.0						
	2				7.68	8.1	7.0						
	3				[illegible]	7.40	7.3						
	4				785	87	80						
	5				794	82	75						
	6												
	7												

Wacker

SCOEPA00018829

Doc ID: O:\Clom\Port.BRN\LifeSci.SEC\Forms\CRLarvQC.FOR
Revision #: 1.01
Revision Date: 11/18/93

CHRONIC RENEWAL LARVAE TOXICITY TEST - QUALITY ASSURANCE PARAMETERS

Sample: A21007 I
Lab: Wackersilt
Source Name:

Test Organism: F. H. M.
Dates Delivered:
Dates Collected:

Test Initiation: 10-8-02
Test Conclusion:
Dechlorination:

Analyst(s):
Reviewed by:

2/2

Conc.	Day	Date	Initials	MEASUREMENTS pH New	pH Old	DO New	DO Old	Sp. Cond. New	Sp. Cond. Old	(mg/L) Alkalinity	Hardness	Ammonia	Chlorine
	0			7.93		8.0		.441					
	1				7.82	8.0	8.1						
	2				7.68	8.2	7.1						
	3				7.87	7.6	7.4						
	4				7.80	8.7	7.5						
	5				7.90	8.2	7.3						
	6												
	7												
	0			7.86		8.0		.429					
	1			7.81	7.79	7.9	7.9						
	2				7.59	8.2	6.6						
	3				7.79	7.8	7.6						
	4			7.84	7.75	8.7	7.9						
	5			7.92	7.83	8.1	7.1						
	6												
	7												
	0												
	1												
	2												
	3												
	4												
	5												
	6												
	7												
	0												
	1												
	2												
	3												
	4												
	5												
	6												
	7												

CHRONIC RENEWAL LARVAE TOXICITY TEST

N ber: A21007T
tat : Wackersit
ple/Source Name: eff

Test Organism: F.H.M.
Dates Delivered: 10-7-01
Dates Collected: 10-6,8,10

Test Initiation: 10-8-02
Test Conclusion: 10-15-02
H_2O Batch #:
Feeding Regime: [illegible]

Analyst(s): HRL / BWD
Reviewed by:
Randomization Chart #:

...e.	Rep.	Number Organisms/ Container	Immobile/Mortality 0	24	48	72	96	120	144	168	Total Mort.	Temperature (°C) 0	24	48	72	96	120	144	168
[redacted]	1	10	0	0	0	1	0	0	0	0	1	26	25	25	25	25	25	26	25
	2	10	↓	↓	0	0	0	1	1	0	2	↓	↓	↓	↓	↓	↓	↓	↓
	3	10	↓	↓	0	0	1	0	↓	0	2	↓	↓	↓	↓	↓	↓	↓	↓
	4	10	↓	↓	0	0	0	1	↓	1	~~2~~ NA 3	↓	↓	↓	↓	↓	↓	↓	↓
	1	10	0	0	0	0	0	0	0	0	2	↓	↓	↓	↓	↓	↓	↓	↓
	2	10	↓	↓	↓	2	0	1	↓	↓	5	↓	↓	↓	↓	↓	↓	↓	↓
	3	10	↓	0	2	0	0	0	↓	↓	2	↓	↓	↓	↓	↓	↓	↓	↓
	4	10	↓	0	0	1	1	1	↓	↓	3	↓	↓	↓	↓	↓	↓	↓	↓
	1	10	0	0	0	0	1	0	0	0	1	↓	↓	↓	↓	↓	↓	↓	↓
	2	10	↓	↓	↓	0	0	↓	↓	0	1	↓	↓	↓	↓	↓	↓	↓	↓
	3	10	↓	↓	0	0	0	↓	↓	1	1	↓	↓	↓	↓	↓	↓	↓	↓
	4	10	↓	↓	0	1	~~0~~ 1	↓	↓	0	2	↓	↓	↓	↓	↓	↓	↓	↓
[redacted]	1	10	0	0	0	0	0	0	0	0	0	↓	↓	↓	↓	↓	↓	↓	↓
	2	10	↓	↓	0	0	0	↓	↓	↓	0	↓	↓	↓	↓	↓	↓	↓	↓
	3	10	↓	↓	0	0	0	↓	↓	↓	0	↓	↓	↓	↓	↓	↓	↓	↓
	4	10	↓	↓	0	0	0	↓	↓	↓	0	↓	↓	↓	↓	↓	↓	↓	↓
[redacted]	1	10	0	0	0	1	0	0	0	0	1	↓	↓	↓	↓	↓	↓	↓	↓
	2	10	↓	↓	0	2	1	↓	0	↓	3	↓	↓	↓	↓	↓	↓	↓	↓
	3	10	↓	↓	0	0	0	↓	1	↓	1	↓	↓	↓	↓	↓	↓	↓	↓
	4	10	↓	↓	0	1	0	↓	1	↓	2	↓	↓	↓	↓	↓	↓	↓	↓
[redacted]		10	0	0	0	0	0	0	0	0	0								
		10	↓	↓	0	1	0	↓	↓	0	1								
		10	↓	↓	0	1	0	↓	↓	1	2								
	4	10	↓	↓	1	0	0	↓	↓	0	1	↓	↓	↓	↓	↓	↓	↓	↓
	1																		
	2																		
	3																		
	4																		
		ANALYST:	BD	HL	HL	HL	HL	HL	HL	HL									

ITS

Doc ID:Z:\CLOM\Port.BRN\LifeSci.SEC\Forms\ChrncRnw.FOR
Revision #: 1.01
Revision Date:2/13/01

CHRONIC RENEWAL LARVAE GROWTH DATA

Lab Number: A21007T
Test Dates: 10-8-02
Weighing Date: 10-14-02
Analyst: NRL

Custabbr: Wackersilt
Drying Temp. (°C): 101°C
Drying Time (h):
Reviewed by:

Conc.	Rep. No.	A Wt. of dry boat (g)	B Dry wt. boat & larvae (g)	B-A Total dry wt. of larvae (g)	C No. of larvae	(B-A)/C Mean dry wt. of larvae (g)	Remarks
Control 0	1	0.74647	0.75207				
	2	0.74873	0.75503				
	3	0.74642	0.75181				
	4	0.74807	0.75274				
Conc. 1.9	1	0.75039	0.75501				
	2	0.75074	0.75513				
	3	0.74704	0.75152				
	4	0.74723	0.75056				
Conc. 3.75	1	0.74868	0.75335				
	2	0.74646	0.75026				
	3	0.74592	0.75041				
	4	0.74862	0.75348				
Conc. 7.5	1	0.74782	0.75370				
	2	0.74550	0.74966				
	3	0.74671	0.75148				
	4	0.74871	0.75359				
Conc. 15	1	0.73836	0.74365				
	2	0.73940	0.74507				
	3	0.74432	0.75008				
	4	0.74198	0.74659				
Conc. 30	1	0.75037	0.75539				
	2	0.74676	0.74932				
	3	0.74820	0.75265				
	4	0.74461	0.74759				

Doc ID: O:\Clom\Port.BRN\LifeSci.SEC\Forms\ToxHzWst.FO
Revision #: 1.00
Revision Date: 11/04/92

STATIC ACUTE TOXICITY TEST - HAZARDOUS WASTE

Job Number: A21007T
Source: eff
Analyst: NRC/BWD
Custabbr: Wacker Silt
Test Fish: F.H.M.
Reviewed By: 1/2
Start Date: 10-8-92 Time: 13:15
End Date: 10-12-92

Conc. (mg/L)	Rep.	Number of organisms/ container	Mortality / 24 hrs. 0	24	48	72	96	Total Mortality	pH 0	24	48	72	96	Specific Cond. 0	96	Dissolved Oxygen (mg/L) 0	24	48	72	96	Temperature (°C) 0	24	48	72	96
0	1	15	0	0	0	0	0	0	7.70				7.37			8.0		8.0		8.0	26	25	25	25	2
	2	15	↓	↓	↓	↓	↓	↓													↓	↓	↓	↓	↓
	3	15	↓	↓	↓	↓	↓	↓																	
1.9	1	15	0	0	1	0	2	3	7.92				7.96			8.2				7.9					
	2	15	↓	↓	0	2	0	2																	
	3	15	↓	↓	0	0	0	0																	
3.75	1	15	0	0	0	1	1	2	7.95				7.94			8.0				7.50					
	2	15	↓	↓	↓	2	0	2																	
	3	15	↓	↓	↓	0	0	0																	
7.5	1	15	0	0	3	0	0	3	7.95				7.94			8.2				7.49					
	2	15	↓	↓	2	1	0	3																	
	3	15	↓	↓	1	1	1	3																	
15	1	15	0	0	2	1	0	3	7.93				7.90			8.0				7.00					
	2	15	↓	↓	3	1	0	4																	
	3	15	↓	↓	2	1	1	3													↓	↓	↓	↓	↓

Comments:

SCOEPA00018833

Doc ID: O:\Clom\Port.BRN\LifeSci.SEC\Forms\ToxHzWst.FOR
Revision #: 1.00
Revision Date: 11/04/92

STATIC ACUTE TOXICITY TEST - HAZARDOUS WASTE

Job Number: A21007T

Custabbr: Wacker silt

Start Date: 10-8-92 Time: _____

Source: _____

Test Fish: F.H.M.

End Date: _____

Analyst: _____ 2/2

Reviewed By: _____

Conc. (mg/L)	Rep.	Number of organisms/ container	Mortality / 24 hrs. 0	24	48	72	96	Total Mortality	pH 0	24	48	72	96	Specific Cond. 0	96	Dissolved Oxygen (mg/L) 0	24	48	72	96	Temperature (°C) 0	24	48	72	96
7																									
30%	1	15	0	3	0	0	0	3	7.86				7.92			8.0				6.6	26	26	25	25	25
	2	15	↓	0	2	2	0	4													↓	↓	↓	↓	↓
	3	15	↓	0	1	1	1	3													↓	↓	↓	↓	↓

SCOEPA00018834

CERIODAPHNIA TOXICITY TEST: WATER QUALITY PARAMETERS

Number: A21007T
Prepar: Wackerlin
Source Name: PH

Test Organism: C. dub
Dates Delivered: 10-7-11
Dates Collected: 10-6,8,10

Test Initiation: 10-8-02
Test Conclusion: 10-15-02
Dechlorination:

Analyst(s): HRC/BWD
Reviewed by:

1/2

Conc.	Day	Date	Analyst Initials	Temp. (°C)	MEASUREMENTS pH New	pH Old	DO New	DO Old	Sp. Cond. New	Sp. Cond. Old	(mg/L) Alkalinity	Hardness	Ammonia	Chlorine
	0				7.92		8.2							
	1				8.00	8.01	8.1	8.0						
	2				7.91	7.96	8.1	8.2						
	3				8.17	8.01								
	4				8.09		8.0	8.9						
	5				8.15	8.48	8.2	8.3						
	6				8									
	7													
	8													
	0				7.95		8.2							
	1					7.99	8.0	8.0						
	2					7.97	8.2	8.2						
	3					8.26								
	4					8.09	8.8	8.9						
	5					8.45	8.1	8.2						
	6													
	7													
	8													
	0				7.86		8.2							
	1					7.88	7.8	7.9						
	2					7.95	8.0	8.2						
	3					8.10								
	4					8.06	8.8	9.0						
	5					8.40	8.2	8.5						
	6													
	7													
	8													
	0				7.98		8.1							
	1					7.96	7.8	7.8						
	2					7.94	8.2	8.1						
	3					8.12								
	4					8.30	8.7	8.9						
	5					8.49	8.3	8.4						
	6													
	7													
	8													

Warner

CERIODAPHNIA TOXICITY TEST: WATER QUALITY PARAMETERS

Sample #: A21007I
Lab #:
Source Name:

Test Organism:
Dates Delivered:
Dates Collected:

Test Initiation: 10-8-02
Test Conclusion:
Dechlorination:

Analyst(s):
Reviewed by:

2/2

Conc.	Day	Date	Analyst Initials	Temp. (°C)	MEASUREMENTS									
					pH		DO		Sp. Cond.		(mg/L)			
					New	Old	New	Old	New	Old	Alkalinity	Hardness	Ammonia	Chlorine
	0				7.96		8.2							
	1					7.94	7.7	7.8						
	2					7.90	8.1	8.1						
	3					8.10								
	4					8.19	8.7	8.7						
	5					8.39	8.3	8.0						
	6													
	7													
	8													
	0				7.84		8.1							
					7.82	7.88	7.6	7.7						
						7.89	8.0	8.9						
						8.05								
					8.01	8.21	8.6	8.7						
	5				8.18	8.33	8.2	8.3						
	6													
	7													
	8													
	0													
	1													
	2													
	3													
	4													
	5													
	6													
	7													
	8													
	0													
	1													
	2													
	3													
	4													
	5													
	6													
	7													
	8													

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Revision #: 1.02
Revision Date: 11/26/97

CHRONIC RENEWAL CERIODAPHNIA TOXICITY TEST: SURVIVAL AND REPRODUCTION DATA

Nu ber: A2100TT
abbr: WackerSit
ple/Source Name: eff

Test Organism: c. dub
Dates Delivered: 10-7-11
Dates Collected: 10-6,8,10

Test Initiation: 10-8-02
Test Conclusion: 10-15-02
H_2O Batch #:
Feeding Regime: daily

Analyst(s): HRL/BWD
Reviewed by:
Randomization Chart #:

Conc. g/L	Rep.	Number Organisms @ Start	10-9 0	10-10 1	2	3	4	5	6	7	8	Total Mort.	0	1	2	3	4	5	6	7	8	Total Offspring
	1	1	0	0	0	0	0	0	0	0			0	0	0	0	2	0	3	0		
	2	1			1							1										0
		1				0	0	0	0	0						0	0	4	0	3		
		1			1							1										0
		1			1							1										0
		1			0	0	0	0	0	0						0	3	0	2	0		
		1			1							1										0
		1			1							1										0
	9	1		0	0	0	0	0	0	0						0	0	0	0	0		
	10	1		0	0	1						1				0						0
	1	1	0	0	0	0	0	0	0	0			0	0	0	0	1	0	0	0		
	2	1															0					
		1															1					
		1										1										
		1		0	0	0	0	0	0	0						0	2	0	0	0		
		1			0	0	0	0	0	0						0	1	0	0	0		
		1										1										
	9	1			0	0	0	0	0	0						0	0	0	0	0		
	10	1			0	0	0	0	0	0						0	0	0	0	0		
	1	1	0	0	0	0	0	0	0	0			0	0	0	1	3	1	11	15		
	2	1														2	0	2	13	13		
	3	1														2	1	0	12	19		
		1														0	2	2	10	15		
		1			1																	0
		1		0	0	0	0	0	0	0						1	0	4	10	16		
	7	1		0	0	0	0	0	0	0						0	4	0	12	12		
	8	1		0	1																	0
	9	1		0	0	0	0	0	0	0						0	3	0	13	14		
	0	1		0	0	0	0	0	0	0						1	3	3	12	10		
	1	1	0	0	0	0	0	0	0	0			0	0	0	0	2	0	2	0		
	2	1															3		2			
		1															0		0			
		1															0		0			
		1			1																	
		1			0	0	0	0	0	0						0	1	0	0	0		
		1			1																	
		1			0	0	0	0	0	0						0	2	0	0	0		
	10	1															0					
	1	1	0	0	0	1						1	0	0	0	0						0
		1																				0
		1										1										0
		1										1										0
		1			0	0	0	0	0	0						0	1	0	0	0		
		1			0	0	0	1				1				0	2	0				2
		1			0	0	0	0	0	0						0	0	0	0	0		
	8	1			1							1										0
	9	1			1							1										0
		1			0	0	0	0	0	0						0	0	0	0	0		
		1	0	0	0	0	0	0	0	0			0	0	0	0	0	0	0	0		
		1										1										
		1										1										
		1		0	0	0	0	0	0	0							0	0	0	0		
		1															1					
		1															0					
	7	1															0					
	8	1			1							1										
	9	1			0	0	0	0	0	0						0	0	0	0	0		
	10	1			0	0	0	0	0	0						0	0	0	0	0		
	ANALYST:		BD	BD	BD	HL	HL	HL	HL	HL												

S: Wacker

SCOEPA00018837

Doc ID: O:\Clom\Port.BRN\LifeSci.SEC\Forms\ToxHzWst.I
Revision #: 1.00
Revision Date: 11/04/92

STATIC ACUTE TOXICITY TEST - HAZARDOUS WASTE

Job Number: A 21007T
Custabbr: Wackersilt
Start Date: 10-7-02 Time: 15:30

Source: eff
Test Fish: C. dub
End Date: 10-9-02

Analyst: NRL/BWD
Reviewed By: [illegible]

Conc. (mg/L) %	Rep.	Number of organisms/ container	Mortality / 24 hrs. 0	24	48	72	96	Total Mortality	pH 0	24	48	72	96	Specific Cond. 0	96	Dissolved Oxygen (mg/L) 0	24	48	72	96	Temperature (°C) 0	24	48	72
0	1	5	0	0	0			0	800		815					8.0		8.1			25	25	25	
	2	5	↓	↓	↓			↓													↓	↓	↓	
	3	5																						
	4	5	↓	↓	↓			↓																
1.9	1	5	0	0	0			0	795		860					8.2		8.4						
	2	5	↓	↓	↓			↓													↓	↓	↓	
	3	5																						
	4	5	↓	↓	↓			↓																
3.75	1	5	0	0	2			2	786		868					8.2		8.5						
	2	5	↓	↓	0			0													↓	↓	↓	
	3	5			1			1																
	4	5	↓	↓	0			0																
7.5	1	5	0	0	2			2	798		856					8.1		8.4						
	2	5	↓	0	0			0													↓	↓	↓	
	3	5		1	0			1																
	4	5	↓	0	0			0																

SCOEPA00018838

Doc ID: O:\Clom\Port.BRN\LifeSci.SEC\Forms\ToxHzWst.FOR
Revision #: 1.00
Revision Date: 11/04/92

STATIC ACUTE TOXICITY TEST - HAZARDOUS WASTE

Job Number: A 21007T Source: _____ Analyst: _____

Custabbr: Wackersilt Test Fish: _____ Reviewed By: _____

Start Date: 10-7-92 Time: _____ End Date: _____

2/2

Conc. (mg/L)	Rep.	Number of organisms/ container	Mortality / 24 hrs. 0	24	48	72	96	Total Mortality	pH 0	24	48	72	96	Specific Cond. 0	96	Dissolved Oxygen (mg/L) 0	24	48	72	96	Temperature (°C) 0	24	48	72	96
15	1	5	0	2	2			4	798		850					82		82			25	25	25		
	2	5	|	0	1			1													|	|	|		
	3	5	|	1	2			3													|	|	|		
	4	5	|	3	1			4													|	|	|		
30	1	5	0	4	0			4	796		819					81		78			|	|	|		
	2	5	|	2	2			4													|	|	|		
	3	5	|	1	2			3													|	|	|		
	4	5	|	3	1			4													|	|	|		

Comments: _____

SCOEPA00018839

APPENDIX B

REFERENCE TOXICANT DATA SHEETS

COFFEY LABORATORIES, INC.
12423 N.E. Whitaker Way • Portland, OR • 97230 • (503) 254-1794 • FAX (503) 254-1452

Doc ID: G:\Clom\Port.BRN\LifeSci.SEC\Forms\CRLarvQC.FOR
Revision #: 1.01
Revision Date: 11/18/93

CHRONIC RENEWAL LARVAE TOXICITY TEST - QUALITY ASSURANCE PARAMETERS

im r: Oct Ref Tox
br
/Source Name: NaCl

Test Organism: F.H.M.
Dates Delivered: 10-7, 9, 11, 14
Dates Collected:

Test Initiation: 10-8-02
Test Conclusion: 10-15-02
Dechlorination:

Analyst(s): HRL/BWD
Reviewed by:

1/2

Conc.	Day	Date	Initials	MEASUREMENTS pH New	pH Old	DO New	DO Old	Sp. Cond. New	Sp. Cond. Old	(mg/L) Alkalinity	Hardness	Ammonia	Chlorine
	0			7.87		7.8		336					
	1			7.79	7.87	7.7	7.8						
	2			7.73	7.68	8.1	6.7						
	3			8.05	7.91		~~7.9~~						
	4			805	793	90	80						
	5			815	814	84	75						
	6												
	7												
	0			7.81		7.9		2220					
	1				7.80	7.9	8.0						
	2				7.65	8.1	6.9						
	3				7.91								
	4				785	83	79						
	5				800	79	74						
	6												
	7												
	0			7.79		7.9		4910					
	1				7.79	8.1	7.9						
	2				7.61	8.2	7.3						
	3				7.87								
	4				781	85	80						
	5				794	80	76						
	6												
	7												
	0			7.77		79		~~7260~~ 6900					
	1				7.77	8.0	8.0						
	2				7.57	8.1	6.8						
	3				7.85								
	4				780	86	81						
	5				789	80	71						
	6												
	7												

Ref Tox

SCOEPA00018841

Doc ID: O:\Clom\Port.BRN\LifeSci.SEC\Forms\CRLarvQC.FCR
Revision #: 1.01
Revision Date: 11/18/93

CHRONIC RENEWAL LARVAE TOXICITY TEST - QUALITY ASSURANCE PARAMETERS

um r: Oc+Ref Tox
obt
e/Source Name:

Test Organism:
Dates Delivered:
Dates Collected:

Test Initiation:
Test Conclusion:
Dechlorination:

Analyst(s):
Reviewed by:

2/2

Conc.	Day	Date	Initials	MEASUREMENTS									
				pH		DO		Sp. Cond.		(mg/L)			
				New	Old	New	Old	New	Old	Alkalinity	Hardness	Ammonia	Chlorine
	0			7.81		7.9		1002					
	1				7.74	8.1	7.9						
	2				7.60	8.1	7.2						
	3				7.83								
	4				7.79	8.4	8.1						
	5				7.85	7.9	7.3						
	6												
	7												
	0			7.79		7.8		8710					
	1			7.81	7.76	7.9	7.9						
	2				7.62	8.0	7.0						
	3												
	4												
	5												
	6												
	7												
	0												
	1												
	2												
	3												
	4												
	5												
	6												
	7												
	0												
	1												
	2												
	3												
	4												
	5												
	6												
	7												

CHRONIC RENEWAL LARVAE TOXICITY TEST

Number: Oct Ref Tox
Test Organism: F.H.M.
Dates Delivered: 10-7, 9, 11, 14
Dates Collected:
Source Name: NaCl
Test Initiation: 10-8-02
Test Conclusion: 10-15-02
H_2O Batch #:
Feeding Regime:
Analyst(s): HRL/BWD
Reviewed by:
Randomization Chart #:

Conc.	Rep.	Number Organisms/ Container	Immobile/Mortality 0	24	48	72	96	120	144	168	Total Mort.	Temperature (°C) 0	24	48	72	96	120	144	168
	1	10	0	0	0	0	0	0	0	0	0	26	25	25	25	25	25	26	25
	2	10	|	2	0	|	|	|	|	1	3	|	|	|	|	|	|	|	|
	3	10	|	0	0	|	|	|	|	0	0	|	|	|	|	|	|	|	|
	4	10	|	0	0	|	|	|	|	0	0	|	|	|	|	|	|	|	|
	1	10	0	1	2	0	0	3	1	0	7	|	|	|	|	|	|	|	|
	2	10	|	0	1	|	0	1	2	1	5	|	|	|	|	|	|	|	|
	3	10	|	0	0	|	1	2	5	~~2~~ 1	9	|	|	|	|	|	|	|	|
	4	10	|	1	0	|	0	2	3	0	6	|	|	|	|	|	|	|	|
	1	10	0	0	0	0	0	0	0	0	0	|	|	|	|	|	|	|	|
	2	10	|	|	0	|	|	|	|	|	0	|	|	|	|	|	|	|	|
	3	10	|	|	0	|	|	|	|	|	0	|	|	|	|	|	|	|	|
	4	10	|	|	0	|	|	|	|	|	0	|	|	|	|	|	|	|	|
	1	10	0	1	0	0	0	0	1	0	2	|	|	|	|	|	|	|	|
	2	10	|	2	0	|	|	0	3	1	6	|	|	|	|	|	|	|	|
	3	10	|	0	0	|	|	0	5	0	5	|	|	|	|	|	|	|	|
	4	10	|	1	0	|	|	2	1	0	3	|	|	|	|	|	|	|	|
	1	10	0	8	2	—	—	—	—	—	10	|	|	|	|	|	|	|	|
	2	10	|	8	2	—	—	—	—	—	10	|	|	|	|	|	|	|	|
	3	10	|	9	1	—	—	—	—	—	10	|	|	|	|	|	|	|	|
	4	10	|	10	—	—	—	—	—	—	10	|	|	|	|	|	|	|	|
	1	10	0	1	0	2	0	2	1	1	7	|	|	|	|	|	|	|	|
	2	10	|	6	3	0	0	0	1	—	10	|	|	|	|	|	|	|	|
	3	10	|	4	1	0	1	1	3	—	10	|	|	|	|	|	|	|	|
	4	10	|	1	1	0	0	1	2	0	5	|	|	|	|	|	|	|	|
	1																		
	2																		
	3																		
	4																		
		ANALYST:	HL	HL	HL	HL	HL	HL	HL	HL									

NTS

SCOEPA00018843

Doc ID:Z:\CLOM\Port.BRN\LifeSci.SEC\Forms\ChrncRnw.FOR
Revision #: 1.01
Revision Date:2/13/01

CHRONIC RENEWAL LARVAE GROWTH DATA

Job Number: Oct Ref Tox
Test Dates: 10-8-02
Weighing Date: 10-16-02
Analyst: WDL

Custabbr:
Drying Temp. (°C):
Drying Time (h):
Reviewed by:

Conc.	Rep. No.	A Wt. of dry boat (g)	B Dry wt. boat & larvae (g)	B-A Total dry wt. of larvae (g)	C No. of larvae	(B-A)/C Mean dry wt. of larvae (g)	Remarks
Control 0	1	0.74458	0.74868				
	2	0.74832	0.75420				
	3	0.74584	0.75275				
	4	0.74529	0.75105				
Conc. 1.0	1	0.74560	0.75297				
	2	0.74709	0.75035				
	3	0.74789	0.75421				
	4	0.74676	0.75186				
Conc. 2.5	1	0.74755	0.75137				
	2	0.74848	0.74978				
	3	0.74667	0.74965				
	4	0.74580	0.74851				
Conc. 4.0	1	0.74448	0.74525				
	2	0.74530	0.74745				
	3	0.74643	0.74649				
	4	0.75007	0.75128				
Conc. 5.5	1	0.74728	0.74799				
	2	0.75083	0.75099				
	3						
	4						
Conc. 8.0							

Doc ID: O:\Clom\Port.BRN\LifeSci.SEC\Forms\ToxHzWst.FOR
Revision #: 1.00
Revision Date: 11/04/92

STATIC ACUTE TOXICITY TEST - HAZARDOUS WASTE

Job Number: Oct Ref Tox
Source: NaCl
Analyst: HRC / BWD
Custabbr:
Test Fish: F.H.M.
Reviewed By:
Start Date: 10-8-02 Time: 1315
End Date: 10-12-02

1/2

Conc (mg/L) %	Rep.	Number of organisms/ container	Mortality / 24 hrs. 0	24	48	72	96	Total Mortality	pH 0	24	48	72	96	Specific Cond. 0	96	Dissolved Oxygen (mg/L) 0	24	48	72	96	Temperature (°C) 0	24	48	72	96
0	1	15	0	0	0	0	0	0	787				805			78					26	25	25	25	25
	2	15	↓	↓	↓	↓	↓	↓													↓	↓	↓	↓	↓
	3	15	↓	↓	↓	↓	↓	↓																	
1.0%	1	15	0	0	0	0	0	0	781				790			79									
	2	15	↓	↓	↓	↓	↓	↓																	
	3	15	↓	↓	↓	↓	↓	↓																	
2.5%	1	15	0	0	1	0	0	1	777				788			79									
	2	15	↓	↓	0	0	1	1																	
	3	15	↓	↓	0	0	0	0																	
4.0%	1	15	0	0	3	0	2	5	781				785			79									
	2	15	↓	2	0	0	0	2																	
	3	15	↓	0	2	2	0	4																	
5.0%	1	15	0	1	3	2	1	7	780				785			79									
	2	15	↓	1	4	3	2	10																	
	3	15	↓	2	4	3	0	9													↓	↓	↓	↓	↓

Comments:

SCOEPA00018845

Doc ID: O:\Clom\Port.BRN\LifeSci.SEC\Forms\ToxHzWst.FOR
Revision #: 1.00
Revision Date: 11/04/92

STATIC ACUTE TOXICITY TEST - HAZARDOUS WASTE

Job Number: Oct Ref Tox

Source: _____

Analyst: _____

Custabbr: _____

Test Fish: F.H.M.

Reviewed By: _____ 2/2

Start Date: 10-8-02 Time: _____

End Date: _____

Conc (mg/L)	Rep.	Number of organisms/ container	Mortality / 24 hrs.					Total Mortality	pH					Specific Cond.		Dissolved Oxygen (mg/L)					Temperature (°C)				
			0	24	48	72	96		0	24	48	72	96	0	96	0	24	48	72	96	0	24	48	72	96
8.0%	1	15	0	12	3			15	779				780			78					26				
	2	15		10	5			15																	
	3	15		15				15																	

Comments:

SCOEPA00018846

CERIODAPHNIA TOXICITY TEST: WATER QUALITY PARAMETERS

mb: Oct Ref Tox
ir:
Source Name: NaCl

Test Organism: C. dub
Dates Delivered: 10-7-02
Dates Collected:

Test Initiation: 10-
Test Conclusion:
Dechlorination:

Analyst(s): JRC/BWD
Reviewed by:

1b

Conc.	Day	Date	Analyst Initials	Temp. (°C)	MEASUREMENTS pH New	pH Old	DO New	DO Old	Sp. Cond. New	Sp. Cond. Old	(mg/L) Alkalinity	Hardness	Ammonia	Chlorine
	0													
	1				8.04	8.06	7.8	7.9						
					8.00	8.04								
					8.35	8.20								
					812	814	86	85						
	5				831	834	83	83						
	6													
	7													
	8													
	0													
	1					8.01	7.9	7.8						
						8.02								
						8.14								
						814	85	85						
						827	80	80						
	6													
	7													
	8													
	0													
	1					8.00	7.9	7.8						
						8.02								
						8.14								
						815	85	84						
						827	81	80						
	6													
	7													
	8													
	0													
						7.96	7.9	7.8						
						7.98								
						8.11								
						818	85	87						
	5					832	82	82						
	6													
	7													
	8													

Ref Tox

SCOEPA00018847

CERIODAPHNIA TOXICITY TEST: WATER QUALITY PARAMETERS

mi : Oct Ref Tox
or:
/Source Name:

Test Organism:
Dates Delivered:
Dates Collected:

Test Initiation: 10-
Test Conclusion:
Dechlorination:

Analyst(s):
Reviewed by:

Conc.	Day	Date	Analyst Initials	Temp. (°C)	MEASUREMENTS									
					pH		DO		Sp. Cond.		(mg/L)			
					New	Old	New	Old	New	Old	Alkalinity	Hardness	Ammonia	Chlorine
	0													
	1					7.95	8.0	7.8						
	2													
						8.10								
						8.13	8.6	8.6						
						8.30	8.0	8.2						
	6													
	7													
	8													
	0													
	1				7.95	7.93	7.8	7.6						
	4													
	5													
	6													
	7													
	8													
	0													
	1													
	2													
	3													
	4													
	5													
	6													
	7													
	8													
	0													
	1													
	2													
	3													
	4													
	5													
	6													
	7													
	8													

Doc ID: I:\Clom\Port.BRN\LifeSci.SEC\Forms\Reprodat.for
Revision #: 1.02
Revision Date: 11/26/97

CHRONIC RENEWAL CERIODAPHNIA TOXICITY TEST: SURVIVAL AND REPRODUCTION DATA

Number: Oct Ref Tox
Test Organism: C. dub
Test Initiation: 10-8-03
Analyst(s): HRC/BWD
Lab:
Dates Delivered: 10-7
Test Conclusion: 10-15-03
Reviewed by:
Sample Source Name: NaCl
Dates Collected:
H_2O Batch #:
Randomization Chart #:
Feeding Regime: daily

Conc./L	Rep.	Number Organisms @ Start	0	1	2	3	4	5	6	7	8	Total Mort.	0	1	2	3	4	5	6	7	8	Total Offspring
	1	1	0	0	0	0	0	0	0	0			0		0	0	2	0	5	7		
	2	1				0										0	0	1	6	9		
	3	1				0										0	0	0	4	5		
		1				0										2	0	1	11	11		
		1				1						1				0						0
		1				0	0	0	0	0						1	0	1	6	6		
		1				0										0	0	0	7	9		
		1				0										0	0	0	0	0		
	9	1				0										1	0	0	0	0		
	10	1				0										0	0	0	5	3		
	1	1	0	0	0	0	0	0	0	0			0	0	0	0	0	0	0	0		
		1			0															0		
		1			0															0		
		1			1																	
		1			0	0	0	0	0	0							0	0	0	0		
		1																		0		
		1																		0		
	8	1																		0		
	9	1																		0		
	10	1																		0		
	1	1	0	0	0	0	0	0	0	0			0	0	0	0	2	0	13	15		
	2	1													0		2		14	16		
		1													0		3		12	19		
		1													0		0		10	13		
		1													0	2	1		12	13		
		1													0	0	4		13	15		
		1													0		3		12	12		
		1													0		4		11	19		
	9	1													0		5		13	14		
	10	1													0		3		11	10		
	1	1	0	0	1								0	0	0							0
	2	1			0	0	0	0	0	0						0	0	0	0	0		
		1			0													0	5	3		
		1			0													0	0	0		
		1			1																	0
		1			0	0	0	0	0	0						0	0	0	0	0		
		1															0	0	0	0		
		1															0	0	0	0		
	9	1															0	0	4	2		
	10	1															0	0	0	0		
		1	0	1									0	0								0
		1																				0
		1																				0
		1																				0
		1																				0
		1																				0
		1																				0
		1																				0
		1																				0
	1	1	0	0	0	0	0	0	0	0			0	0	0	0	0	0	0	0		0
		1																				0
		1																				0
		1																				0
		1																				0
		1																				0
		1																				0
		1																				0
	10	1																				0
	ANALYST:		HC	HL	BD	HC	HL	HL	HL	HL												

ts: Ref Tox

SCOEPA00018849

Doc ID: O:\Clom\Port.BRN\LifeSci.SEC\Forms\ToxHzWst.FOR
Revision #: 1.00
Revision Date: 11/04/92

STATIC ACUTE TOXICITY TEST - HAZARDOUS WASTE

Job Number: Oct Ref Tox

Source: NaCl C. dub

Analyst: HRC/BWD

1/2

Custabbr:

Test Fish:

Reviewed By:

Start Date: 10-12-02 Time: 1700

End Date: 10-14-02

Conc. (mg/L)	Rep.	Number of organisms/ container	Mortality / 24 hrs.					Total Mortality	pH					Specific Cond.		Dissolved Oxygen (mg/L)					Temperature (°C)				
			0	24	48	72	96		0	24	48	72	96	0	96	0	24	48	72	96	0	24	48	72	96
0	1	5	0	0	0			0																	
	2	5																							
	3	5																							
	4	5																							
0.5%	1	5	0	0	0			0																	
	2	5			0			0																	
	3	5			0			0																	
	4	5			0			0																	
1.0%	1	5	0	0	0			0																	
	2	5		1	0			1																	
	3	5		0	0			0																	
	4	5		0	0			0																	
1.5%	1	5	0	0	0			0																	
	2	5			1			1																	
	3	5			0			0																	
	4	5			0			0																	

Comments:

SCOEPA00018850

Doc ID: O:\Clom\Port.BRN\LifeSci.SEC\Forms\ToxHzWst.FOR
Revision #: 1.00
Revision Date: 11/04/92

STATIC ACUTE TOXICITY TEST - HAZARDOUS WASTE

Job Number: Oct Ref Tox

Source: _____

Analyst: _____ 2/2

Custabbr: _____

Test Fish: _____

Reviewed By: _____

Start Date: _____ Time: _____

End Date: _____

Conc (mg/L)	Rep.	Number of organisms/ container	Mortality / 24 hrs.					Total Mortality	pH					Specific Cond.		Dissolved Oxygen (mg/L)					Temperature (°C)				
			0	24	48	72	96		0	24	48	72	96	0	96	0	24	48	72	96	0	24	48	72	96
2.0%	1	5	0	4	1			5																	
	2	5		3	1	0		4																	
	3	5		4	1			5																	
	4	5		4	1			5																	
30%	1	5	0	5				5																	
	2	5		5				5																	
	3	5		5				5																	
	4	5		4	1			5																	

Comments:

SCOEPA00018851

APPENDIX C

CHAIN-OF-CUSTODY

COFFEY LABORATORIES, INC.
12423 N.E. Whitaker Way • Portland, OR • 97230 • (503) 254-1794 • FAX (503) 254-1452

COFFEY LABORATORIES, INC. - CHAIN OF CUSTODY AGREEMENT

12423 NE Whitaker Way, Portland, OR 97230
(503) 254-1794 (503) 254-1452 (fax)
www.coffeylabs.com

Company: WACKER SILTRONIC
Address: 7200 NW Front Avenue
Portland, OR 97210

Attn: Tom Rothschild/Dianne Irish

Phone: (503) 219-7374; Fax (503) 417-4144

PO # 4500-75102
Project: Bioassay
Project #: 02-125

Sample Turnaround
[ ] Standard
[ ] Priority – Additional Fee
[ ] Rush – Additional Fee
[ ] Emergency – Additional Fee
Initials:_____

Report Instructions & Sample Comments:
Dilutions Required: 30%, 15%, 7.5%, 3.75%, and 1.9%.

FOR LABORATORY USE ONLY:
Samples received with proper bottle & preservative
[ ] Yes [ ] No,
Explain_____
Sample Temperature OK
Job # MXA21007T-1
Custabbr: wackersilt

2809
1902

Sample ID:	02-125			
Date Collected:	7Oct2002			
Time Collected:	0800			
Sampled by:	JJR			

Analysis	1	2	3	4	Prices	P Code	Comments
Metals: As, Cu, Cr, Pb, Hg, Ag, Se (please circle) Note: Cr needs DL of 0.001, EPA 218.2 Other:					Digestion Fee $20.00 $10.00 per metal	J	
OD					$30.00	R	
OX or EOX (please circle)					$80.00	E	
Volatile Organics EPA 8260					$140.00	U	
Semi Volatiles (EPA 8270) Incl 1-2 Diphenylhydrazine					$290.00	A	
Fingerprint Scan IPA					$125.00	A	
Bioassay, Acute/Chronic		X					
Ammonia- Nitrogen		X					
Alkalinity		X					
Nitrate- Nitrogen		X					
Hydrogen Peroxide		X					

Relinquished by: (Sign) Thomas J. Rothschild	(Date) 7 October 2002		
Received by: (Sign)	(Date) 10/7/02		
Relinquished by: (Sign)	(Date)	(Time)	
Received by:(Lab Use Only)	(Date) 10/7/02	(Time) 1715	

SCOEPA00018853

CHAIN OF CUSTODY AGREEMENT

CENTRAL OREGON BRANCH
82[illegible] 7th
Redmond, OR 97756
PHONE/FAX (541) 548-0972

CORPORATE HEADQUARTERS
12423 NE Whitaker Way
Portland, OR 97230
(503) 254-1794 FAX: (503) 254-1452

EASTERN OREGON BRANCH
419 SW 5th
Pendleton, OR 97801
PHONE/FAX (541) 276-0385

Report Attention: Jom Rothschild
Company Name: Wacker Siltronic
Mailing Address: 7200 NW Front Ave
Portland, Oregon
Phone: (503) 219-7374 FAX: (503) 417-4144

Report Instructions (Special - Additional- Job Specific):
Required Dilutions for Bioassay:
30%, 15%, 7.5%, 3.75% & 1.9%

PO Number: 4500075102
Project Number: 02-131
Project Name: Bioassay
EPA Protocol Containers: Y/N Other:

Sample Turnaround
- [x] Standard
- [ ] Priority (Additional Fee)
- [ ] Rush (Additional Fee)
- [ ] Emergency (Additional Fee)

Reporting Request
- [ ] State Compliance Format
- [x] FAX Results - Preliminary
- [x] FAX Results-Final
- [ ] Verbals Results
- [ ] Extra Report Copy (Fees Associated)

Initials: DI

FOR LABORATORY USE ONLY Page 2 of 2
Job Number: MX-A2100ZT-3
Custabbr: Wacker Silt ☐NEW
☐ VISA ☐ M/C Cardholder:
Card #: Exp: / /
Cash / Check / CC:$ #:
Billing Code: 1 2 3 4
QC LEVEL: 1 2 3 4
FEDX BUS COURIERS UPS LAB CLIENT MAIL AIR

Sample ID	Loc.	ID	#	Collection Date	Time	Media	Analysis Requested	Test/ Profile
02-131				10/9/02	0745	WW	Bioassay: Acute + Chronic	
"				"	"	↓	Ammonia-Nitrogen, Alkalinity	
"				"	"		Nitrate-Nitrogen	
"				"	"		Hydrogen Peroxide	

Sampled By: Jom Rothschild
AUTHORIZED CUSTOMER SIGNATURE: Dianne [illegible] DATE: 10-9-02

Sample Comments	Relinquished by: (Please Sign)	Date	Time	Received by: (Sign)	Date	Time
	Dianne [illegible]	10-9-02	0830	[illegible]	10/9/02	1115
				LAB		

White Copy-Laboratory Yellow Copy -Customer

COMPLETE THIS FORM PER INSTRUCTIONS ON REVERSE SIDE

SUBMISSION OF SAMPLES WITH TESTING REQUIREMENTS TO CLI WILL BE UNDERSTOOD TO BE AN AGREEMENT FOR SERVICES IN ACCORDANCE WITH THE CONDITIONS LISTED ON THE BACK OF THE CLIENT COPY.

SCOEPA00018854

CHAIN OF CUSTODY AGREEMENT

CENTRAL OREGON BRANCH
827 SW 7th
Redmond, OR 97756
PHONE/FAX (541) 548-0972

CORPORATE HEADQUARTERS
12423 NE Whitaker Way
Portland, OR 97230
(503) 254-1794 FAX: (503) 254-1452

EASTERN OREGON BRANCH
419 SW 5th
Pendleton, OR 97801
PHONE/FAX (541) 276-0385

Report Attention: Tom Rothschild
Company Name: Wacker Siltronic
Mailing Address: 7200 NW Front Ave
Portland, Oregon
Phone: (503) 219-7374 FAX: (503) 417-4144

Report Instructions (Special - Additional- Job Specific):
Dilutions required for Bioassay:
30%, 15%, 7.5%, 3.75%, w 1.9%

PO Number: 4500075102
Project Number:
Project Name: Bioassay
EPA Protocol Containers: Y/N Other:

Sample Turnaround
- [x] Standard
- [ ] Priority (Additonal Fee)
- [ ] Rush (Additional Fee)
- [ ] Emergency (Additional Fee)

Reporting Request
- [ ] State Compliance Format
- [x] FAX Results - Preliminary
- [x] FAX Results-Final
- [ ] Verbals Results
- [ ] Extra Report Copy (Fees Associated)

Initials: DL

FOR LABORATORY USE ONLY Page 3 of 3
Job Number: MX-A2100 7T-3
Custabbr: Wacker Silt ☐NEW
☐ VISA ☐ M/C Cardholder:
Card #: Exp: / /
Cash / Check / CC:$ #:
Billing Code: 1 2 3 4
QC LEVEL: 1 2 3 4
FEDX BUS COURIERS UPS (LAB) CLIENT MAIL AIR

Sample ID	Loc.	ID	#	Collection Date	Collection Time	Media	Analysis Requested	Test/ Profile
02-132	B1	3x	1	10/11/02	0730	WW	Bioassay: Acute + Chronic	
	N3	3r	1			↓	Ammonia-Nitrogen, Alkalinity	
	B5E	3f	1				Nitrate-Nitrogen	
	006	3j	1			↓	Hydrogen Peroxide	

Sampled By: Tom Rothschild
AUTHORIZED CUSTOMER SIGNATURE: Dianna Irish DATE: 10/11/02

Sample Comments	Relinquished by: (Please Sign)	Date	Time	Received by: (Sign)	Date	Time
	Dianna Irish	10/11/02	0830	[illegible]	10/11/02	1015
				LAB [illegible]	10/11/02	1600

White Copy-Laboratory Yellow Copy -Customer

COMPLETE THIS FORM PER INSTRUCTIONS ON REVERSE SIDE

SUBMISSION OF SAMPLES WITH TESTING REQUIREMENTS TO CLI WILL BE UNDERSTOOD TO BE AN AGREEMENT FOR SERVICES IN ACCORDANCE WITH THE CONDITIONS LISTED ON THE BACK OF THE CLIENT COPY.

SCOEPA00018855

APPENDIX D

ORGANISM HISTORY

COFFEY LABORATORIES, INC.
12423 N.E. Whitaker Way • Portland, OR • 97230 • (503) 254-1794 • FAX (503) 254-1452

1300 Blue Spruce Drive, Suite C
Fort Collins, Colorado 80524

AQUATIC BIO SYSTEMS ABS INC.

Toll Free: 800/331-5916
Tel: 970/484-5091 Fax:970/484-2514

Wacker
Ref Tox

ORGANISM HISTORY

DATE: 10/7/02

SPECIES: Pimephales promelas

AGE: N/A

LIFE STAGE: Embryo

HATCH DATE: 10/7/02

BEGAN FEEDING: N/A

FOOD: N/A

Water Chemistry Record:	Mean	Range
TEMPERATURE:	25 °C	--
SALINITY/CONDUCTIVITY:	--	--
TOTAL HARDNESS (as $CaCO_3$):	103 mg/l	--
TOTAL ALKALINITY (as $CaCO_3$):	72 mg/l	--
pH:	8.07	--

Comments:

Facility Supervisor

Final Report

Toxicity Evaluation of Effluent to *Ceriodaphnia dubia* and *Pimephales promelas*

Prepared for:
Wacker Siltronic/North Creek Analytical

September 1999

Parametrix, Inc.

TOXICITY EVALUATION OF EFFLUENT

TO *Ceriodaphnia dubia* AND *Pimephales promelas*

Prepared for

WACKER SILTRONIC
c/o NORTH CREEK ANALYTICAL
9405 SW Nimbus Ave.
Beaverton, Oregon 97008

Prepared by

PARAMETRIX, INC.
5808 Lake Washington Blvd. NE
Kirkland, Washington 98033

SEPTEMBER 1999

SIGNATURE PAGE

Submitted by: Parametrix, Inc.
5808 Lake Washington Blvd. NE
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1. INTRODUCTION

This report summarizes the procedures and results of biological testing conducted for North Creek Analytical–Portland. All testing was conducted by Parametrix's Environmental Toxicology Laboratory in Kirkland, Washington.

Table 1. Introductory information.

Client name	Wacker Siltronic/North Creek Analytical
Parametrix job number	55-1945-12 (01)
Toxicity testing requirements	Dual endpoint *Ceriodaphnia dubia* and *Pimephales promelas* bioassays
Plant location	9405 SW Nimbus Ave., Beaverton, Oregon 97008
Test sponsor	Sara McClurg
Name of receiving waterbody	Willamette River

2. SAMPLE SOURCE AND HANDLING

Table 2. Source information for effluent and sample handling.

Sampling point	Final effluent
Collection dates and time	1) 9/8/99; 0810 2) 9/10/99; not reported 3) 9/13/99; not reported
Sample collection method	Composite
Time lapsed from sample collection to receipt by laboratory	<36 hours
Sample collected by	Wacker-Siltronic personnel

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Table 3. Initial chemical and physical determinations.

	Collection Dates:		
Parameter Measured	**9/8/99**	**9/10/99**	**9/13/99**
Temperature (°C)	2	1	1
Salinity (ppt)	0.2	0.1	0.2
Dissolved Oxygen (mg/L)	8.2	7.6	8.6
pH	6.8	7.0	7.0
Conductivity (µS)	910	812	905
Total Hardness (mg/L as $CaCO_3$)	136	138	200
Total Alkalinity (mg/L as $CaCO_3$)	22	92	36
Total Residual Chlorine (mg/L)	<0.01	<0.01	0.02
Ammonia (mg/L)	<1	<1	1

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3. TEST CONDITIONS

Table 4. Summary of test conditions for the dual endpoint *Ceriodaphnia dubia* bioassay.

Test Dates	9-16 September 1999
Test Protocol	*Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms.* EPA/600/4-91/002, July 1994 [see USEPA, 1999. Errata for the Effluent and Receiving Water Toxicity Testing Manuals. EPA-600/R-98/182]; *Whole Effluent Toxicity Testing Guidance Document.* ODEQ. January 1993
Test Material	Whole effluent
Test Organisms/Age	*Ceriodaphnia dubia* (water flea); ≤ 24 hours at initiation
Source of Organisms	In-house cultures
Acclimation Period	None
Number/Test Chamber	1
Volume/Test Chamber	15 mL
Test Concentrations	0, 6.25, 12.5, 25, 50 and 100% effluent
Replicates	Ten
Reference Toxicant	Sodium chloride
Test Duration	7 days
Control/Dilution Media	Natural spring water collected from Gold Creek Trout Farm; Woodinville, WA
Control/Dilution Water Collection Date	9/7/99
Pretreatment of Dilution Water	1 µm filtration
Test Chambers	30 ml polystyrene cups
Lighting	Fluorescent bulbs (50-100 foot candles)
Photoperiod	16 hours light; 8 hours dark
Aeration	None
Feeding	Daily: 100 µL *Selenastrum* suspension; 100 µL yeast/Cerophyl/trout chow (YCT)
Renewal	Daily
Temperature	25 ± 1°C
Chemical Data	pH and dissolved oxygen for each test concentration and the control (both initial and final solutions); temperature and specific conductivity at test initiation and every 24 hours; hardness, alkalinity, ammonia, and residual chlorine for each new sample
Effect Measured	Mortality (defined as immobility) and reproduction
Test Acceptability	Control survival ≥80%; ≥60% of control organisms produce three broods, an average total of 15 or more offspring for the first three broods must be produced
Endpoints reported	Median lethal concentration (LC50) Lowest observed effect concentration (LOEC) No observed effect concentration (NOEC)

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Table 5. Summary of test conditions for the dual endpoint *Pimephales promelas* bioassay.

Test Dates	9-16 September 1999
Test Protocol	*Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms.* EPA/600/4-91/002, July 1994 [see USEPA, 1999. Errata for the Effluent and Receiving Water Toxicity Testing Manuals. EPA-600/R-98/182]; *Whole Effluent Toxicity Testing Guidance Document.* ODEQ. January 1993
Test Material	Whole effluent
Test Organisms/Age	*Pimephales promelas* (fathead minnow); ≤24 hours old
Source of Organisms	Aquatic Biosystems; Fort Collins, Colorado
Acclimation Period	None
Number/Test Chamber	10
Volume/Test Chamber	400 mL
Test Concentrations	0, 6.25, 12.5, 25, 50 and 100% effluent
Replicates	Four
Reference Toxicant	Potassium chloride
Test Duration	7 days
Control/Dilution Media	Laboratory-prepared synthetic water (80-100 mg/L hardness as $CaCO_3$)
Control/Dilution Water Preparation Date	9/9/99
Pretreatment of Dilution Water	None
Test Chambers	1,000 ml HDPE beakers
Lighting	Fluorescent bulbs (50-100 foot candles)
Photoperiod	16 hours light; 8 hours dark
Aeration	None
Feeding	0.15 mL newly hatched brine shrimp nauplii twice daily
Renewal	Daily
Temperature	25 ± 1°C
Chemical Data	Dissolved oxygen, and pH for each test concentration and the control (both initial and final solutions); temperature and specific conductivity at test initiation and every 24 hours; hardness, alkalinity, ammonia, and residual chlorine for 100% effluent
Effect Measured	Mortality and growth
Test Acceptability	Control survival ≥80%; average mean control weight ≥0.25 mg
Endpoints reported	Median lethal concentration (LC50) Lowest observed effect concentration (LOEC) No observed effect concentration (NOEC)

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4. RESULTS

Records of biological and chemical data collected during testing and the statistical analyses (ToxCalc™ 1994-1996) used for reporting are included in the appendices of this report.

Bioassay results are summarized in Table 6 below. In summary, toxicity was observed in the *C. dubia* bioassay at the 48-hour and 7-day exposures, with NOECs of 50% effluent for both survival and reproduction endpoints. In addition, the *P. promelas* bioassay also exhibited toxicity during acute and chronic exposures, with NOECs of 50% effluent for survival and growth.

Control responses were within acceptable ranges, and reference toxicant test results were within the 95 percent confidence limits of the mean effect level.

Table 6. Summary of bioassay results.

Summary of 48-hour acute results:

Evaluation	Survival (% effluent)	
	C. dubia	*P. promelas*
NOEC	50	50
LOEC	100	100
LC50	70.7	>100
Reference Toxicant	Acceptable	Acceptable

Summary of chronic results:

Evaluation	*C. dubia*		*P. promelas*	
	Survival (% effluent)	Reproduction (% effluent)	Survival (% effluent)	Growth % effluent)
NOEC	50	50	50	50
LOEC	100	>50	100	>50
LC50	70.7	N/A	99.6	N/A
Reference Toxicant	Acceptable		Acceptable	

N/A = Not applicable

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5. REFERENCES

ToxCalc™ Version 5.0. 1994-1996. McKinleyville, California: Tidepool Scientific Software.

U.S. EPA. 1994. Short-term methods for estimating the chronic toxicity of effluents and receiving waters to freshwater organisms. EPA/600/4-91/002, July 1994. U.S. Environmental Protection Agency, Cincinnati, Ohio.

ODEQ. 1993. Whole effluent toxicity testing guidance document. January 1993. Oregon Department of Environmental Quality, Portland, Oregon.

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APPENDIX A

DUAL ENDPOINT *Ceriodaphnia dubia* BIOASSAY DATA

Parametrix, Inc.
Environmental Toxicology Laboratory

Ceriodaphnia dubia
Chronic Daily Survival and Offspring

9/1/99 - 9/16/99

Client: NCA - Portland Client Number: Test Dates: ~~9/8/99~~ gm pc

Sample I.D./Source: Effluent Sample Collection Dates: 9/8, 9/10, 9/13 Dilution Media: ~~DW~~ Natural Spring

Temperature (°C) 0 25 24 25 48 25 72 25 96 25 120 25 144 24 168 25

Conc.	Rep.	Survival (hours) 0	24	48	72	96	120	144	168		Offspring (hours) 72	96	120	144	168		Total
CON	A	1	1	1	1	1	1	1	1		4	0	9	12	13		38
	B	1	1	1	1	1	1	1	1		6	0	8	12	0		26
	C	1	1	1	1	1	1	1	1		2	3	6	15	0		26
	D	1	1	1	1	1	1	1	1		0	2	5	~~11~~ (1)	7		14
	E	1	1	1	1	1	1	1	1		0	10	0	8	7		25
	F	1	1	1	1	1	1	1	1		0	5	4	12	0		21
	G	1	1	1	1	1	1	1	1		0	2	6	0	2		10
	H	1	1	1	1	1	1	1	1		0	3	4	7	0		14
	I	1	1	1	1	1	1	1	1		0	4	4	0	0		8
	J	1	1	1	1	1	1	1	1		0	0	5	10	0		15
6.25	A	1	1	1	1	1	1	1	1		7	0	6	10	0		23
	B	1	1	1	1	1	1	1	1		4	0	7	10	0		21
	C	1	1	1	1	1	1	1	1		5	0	8	12	0		25
	D	1	1	1	1	1	1	1	1		6	0	9	17	0		32
	E	1	1	1	1	1	1	1	1		0	4	4	0	0		8
	F	1	1	1	1	1	1	1	1		4	0	3	12	0		~~23~~ 19 JL
	G	1	1	1	1	1	1	1	1		5	0	6	9	11		31
	H	1	1	1	1	1	1	1	1		6	0	7	10	10		33
	I	1	1	1	1	1	1	1	1		3	0	6	13	11		33
	J	1	1	1	1	1	1	1	1		0	4	8	7	0		19
12.5	A	1	1	1	1	1	1	1	1		3	0	8	11	0		22
	B	1	1	1	1	1	1	1	1		0	3	7	11	0		21
	C	1	1	1	1	1	1	1	1		4	0	9	17	11		41 gm
	D	1	1	1	1	1	1	1	1		3	0	0	13	10		~~16~~ 26
	E	1	1	1	1	1	1	1	1		0	3	4	10	1		18
	F	1	1	1	1	1	1	1	1		5	0	9	13	0		27
	G	1	1	1	1	1	1	1	1		5	0	1	13	15		34
	H	1	1	1	1	1	1	1	1		3	0	9	14	0		26
	I	1	1	1	1	1	1	1	1		0	4	6	12	1		23 gm
	J	1	1	1	1	1	1	1	1		4	0	7	11	0 (2)		22

Revised 8/26/99 (1) DC gm 9/15 should read: 0 9/21/99 (2) DC, HR should read 0 9/16

Parametrix, Inc.
Environmental Toxicology Laboratory

Ceriodaphnia dubia
Chronic Daily Survival and Offspring

Conc.	Rep.	Survival (hours) 0	24	48	72	96	120	144	168		Offspring (hours) 72	96	120	144	168		Total
25	A	1	1	1	1	1	1	1	1		4	0	7	8	0		19
	B	1	1	1	1	1	1	1	1		0	4	6	10	0		20
	C	1	1	1	1	1	1	1	1		0	1	0	0	4		5
	D	1	1	1	1	1	1	1	1		0	4	5	10	0		19
	E	1	1	1	1	1	1	1	1		0	4	2	0	14		20
	F	1	1	1	1	1	1	1	1		0	2	3	7	0		12
	G	1	1	1	1	1	1	1	1		3	0	8	11	0		22
	H	1	1	1	1	1	1	1	1		3	0	7	9	0		19
	I	1	1	1	1	1	1	1	1		4	0	0	12	15		31
	J	1	1	1	1	1	1	1	1		0	5	8	14	0		27
50	A	1	1	1	1	1	1	1	1		0	3	6	5	0		14
	B	1	1	1	1	1	1	1	1		0	1	4	0	10		15
	C	1	1	1	1	1	1	1	1		2	0	9	6	5		22
	D	1	1	1	1	1	1	1	1		0	3	5	7	0		15
	E	1	1	1	1	1	1	1	1		0	3	4	0	8		15
	F	1	1	1	1	1	1	1	1		0	3	6	0	10		19
	G	1	1	1	1	1	1	1	1		4	0	5	4	0		13
	H	1	1	1	1	1	1	1	1		3	0	5	5	8		21
	I	1	1	1	1	1	1	1	1		0	4	5	5	0		14
	J	1	1	1	1	1	1	1	1		0	4	4	1	5		14
100	A	1	1	0-1	–	+	0	0	0				0	0	0		0
	B	1	1	0-1	–	+											0
	C	1	1	0-1	–	+											0
	D	1	1	0-1	–	–											0
	E	1	1	0-1	–	–											0
	F	1	1	0-1	–	–											0
	G	1	1	0-1	–	–											0
	H	1	0-1	–	–	–											0
	I	1	0-1	–	–	–											0
	J	1	1	0-1	–	–											0
	Initials	AC	AC	Zm	Zm	HR	HR	gm	HR		Zm	HR	HR	gm	HR		gm
	QC	gm															Cat
	Samp #	1	1	#2	#2	#2	#3	3	NA		#2	#2	#3	3	NA		
	Time	1400	1430	1500	1600	1310	1250	1500	1500		1600	1315	1250	1500	~~15~~		
	Date	~~9/9~~ 9/9	9/10	9/11	9/12	9/13	9/14	9/15	9/16 1445		9/12	9/13	9/14	9/15	9/16 1445		

gm

#2 9/20/99

Revised 8/26/99

Parametrix, Inc.
Environmental Toxicology Laboratory

Ceriodaphnia dubia
Daily Water Quality Parameters

pH Solution																
Date	9/9/99	9/10/99	9/10	9/11	9/11	9/12	9/12	9/13	9/13	9/14	9/14	9/15	9/15	9/16	9/16	
Day	0	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8
Conc	Initial	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Final
Control	8.1	8.1	8.1	8.3	8.3	8.3	8.3	8.0	~~8.0~~ ①	~~8.9~~ ②	7.9	8.2	7.9		7.9	
6.25	8.1	8.1	8.1	8.3	8.3	8.2	8.3	8.1	8.0	8.1	8.0	8.2	7.9		8.1	
12.5	8.0	8.0	8.1	8.2	8.3	8.2	8.3	8.1	8.0	8.1	7.9	8.1	7.9		8.1	
25	8.0	7.9	8.1	8.1	8.2	8.2	8.3	8.0	7.9	8.0	7.9	8.1	7.9		8.1	
50	7.8	7.8	7.9	8.0	8.1	8.0	8.2	7.9	7.8	7.9	7.7	7.9	7.8		8.1	
100	7.6	7.5	7.5	7.6	7.8	—		—	—	—	—	—			—	
Initials	AC	RS	RS	RS	RS	RS	RS	HR	HR	HR	HR	[illegible]	[illegible]		HR	

Dissolved Oxygen (mg/L) Solution																
Conc.	Initial	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Final
Control	8.3	8.3	8.3	8.3	8.4	8.3	8.4	8.3	8.3	8.3	8.3	8.3	8.1		8.3	
6.25	8.3	8.3	8.3	8.3	8.4	8.3	8.4	8.3	8.3	8.3	8.3	8.3	8.1		8.3	
12.5	8.3	8.3	8.3	8.3	8.4	8.3	8.4	8.3	8.3	8.3	8.3	8.3	8.1		8.3	
25	8.3	8.3	8.3	8.3	8.4	8.3	8.4	8.3	8.3	8.3	8.3	8.3	8.2		8.3	
50	8.3	8.3	8.3	8.3	8.4	8.3	8.4	8.3	8.3	8.3	8.3	8.3	8.2		8.3	
100	8.3	8.3	8.3	8.3	8.4	8.3	8.4	—	—	—	—				—	
Initials	AC	RS	RS	RS	RS	RS	RS	HR	HR	HR	HR	[illegible]	[illegible]		HR	

Conductivity (μMHOS)								
Conc.	0 Hour	24 Hours	48 Hours	72 Hours	96 Hours	120 Hours	144 Hours	168 Hours
Cont.	212	213	215	217	~~221~~ ①	378	522	608
100%	883	883	789	—	—	—	—	—
Samp #	1	1	#2	#2	#2	#3	3	NA
Initials	AC	RS	RS	RS	HR	HR	[illegible]	HR

Comments: ① DC, HR, 9/13 Should read 217
② DC, HR, 9/13 Should read 7.9
③ DC, HR, 9/14 Should read 7.9

9/20/99

Revised 8/26/99

Test: CD-Ceriodaphnia Survival and Reproduction Test
Test ID: 2657
Species: CD-Ceriodaphnia dubia
Protocol: EPAF 94-EPA Freshwater
Sample ID: N/AP-Not applicable
Sample Type: EFF2-Industrial
Start Date: 9/9/99 End Date: 9/16/99
Lab ID: WAPTL-Parametrix Tox Lab

Pos	ID	Rep	Group	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Sex	Number of Young	Notes
	1	1	D-Control	1	1	1	1	1	1	1	1	F	38	
	2	2	D-Control	1	1	1	1	1	1	1	1	F	26	
	3	3	D-Control	1	1	1	1	1	1	1	1	F	26	
	4	4	D-Control	1	1	1	1	1	1	1	1	F	14	
	5	5	D-Control	1	1	1	1	1	1	1	1	F	25	
	6	6	D-Control	1	1	1	1	1	1	1	1	F	21	
	7	7	D-Control	1	1	1	1	1	1	1	1	F	10	
	8	8	D-Control	1	1	1	1	1	1	1	1	F	14	
	9	9	D-Control	1	1	1	1	1	1	1	1	F	8	
	10	10	D-Control	1	1	1	1	1	1	1	1	F	15	
	11	1	6.250	1	1	1	1	1	1	1	1	F	23	
	12	2	6.250	1	1	1	1	1	1	1	1	F	21	
	13	3	6.250	1	1	1	1	1	1	1	1	F	25	
	14	4	6.250	1	1	1	1	1	1	1	1	F	32	
	15	5	6.250	1	1	1	1	1	1	1	1	F	8	
	16	6	6.250	1	1	1	1	1	1	1	1	F	19	
	17	7	6.250	1	1	1	1	1	1	1	1	F	31	
	18	8	6.250	1	1	1	1	1	1	1	1	F	33	
	19	9	6.250	1	1	1	1	1	1	1	1	F	33	
	20	10	6.250	1	1	1	1	1	1	1	1	F	19	
	21	1	12.500	1	1	1	1	1	1	1	1	F	22	
	22	2	12.500	1	1	1	1	1	1	1	1	F	21	
	23	3	12.500	1	1	1	1	1	1	1	1	F	41	
	24	4	12.500	1	1	1	1	1	1	1	1	F	26	
	25	5	12.500	1	1	1	1	1	1	1	1	F	18	
	26	6	12.500	1	1	1	1	1	1	1	1	F	27	
	27	7	12.500	1	1	1	1	1	1	1	1	F	34	
	28	8	12.500	1	1	1	1	1	1	1	1	F	26	
	29	9	12.500	1	1	1	1	1	1	1	1	F	23	
	30	10	12.500	1	1	1	1	1	1	1	1	F	22	
	31	1	25.000	1	1	1	1	1	1	1	1	F	19	
	32	2	25.000	1	1	1	1	1	1	1	1	F	20	
	33	3	25.000	1	1	1	1	1	1	1	1	F	5	
	34	4	25.000	1	1	1	1	1	1	1	1	F	19	
	35	5	25.000	1	1	1	1	1	1	1	1	F	20	
	36	6	25.000	1	1	1	1	1	1	1	1	F	12	
	37	7	25.000	1	1	1	1	1	1	1	1	F	22	
	38	8	25.000	1	1	1	1	1	1	1	1	F	19	
	39	9	25.000	1	1	1	1	1	1	1	1	F	31	
	40	10	25.000	1	1	1	1	1	1	1	1	F	27	
	41	1	50.000	1	1	1	1	1	1	1	1	F	14	
	42	2	50.000	1	1	1	1	1	1	1	1	F	15	
	43	3	50.000	1	1	1	1	1	1	1	1	F	22	
	44	4	50.000	1	1	1	1	1	1	1	1	F	15	
	45	5	50.000	1	1	1	1	1	1	1	1	F	15	
	46	6	50.000	1	1	1	1	1	1	1	1	F	19	
	47	7	50.000	1	1	1	1	1	1	1	1	F	13	

ToxCalc 5.0
Reviewed by:

Test: CD-Ceriodaphnia Survival and Reproduction Test
Test ID: 2657
Species: CD-Ceriodaphnia dubia
Protocol: EPAF 94-EPA Freshwater
Sample ID: N/AP-Not applicable
Sample Type: EFF2-Industrial
Start Date: 9/9/99 End Date: 9/16/99
Lab ID: WAPTL-Parametrix Tox Lab

	48	8	50.000	1	1	1	1	1	1	1	1	F	21	
	49	9	50.000	1	1	1	1	1	1	1	1	F	14	
	50	10	50.000	1	1	1	1	1	1	1	1	F	14	
	51	1	100.000	1	1	0	0	0	0	0	0	F	0	
	52	2	100.000	1	1	0	0	0	0	0	0	F	0	
	53	3	100.000	1	1	0	0	0	0	0	0	F	0	
	54	4	100.000	1	1	0	0	0	0	0	0	F	0	
	55	5	100.000	1	1	0	0	0	0	0	0	F	0	
	56	6	100.000	1	1	0	0	0	0	0	0	F	0	
	57	7	100.000	1	1	0	0	0	0	0	0	F	0	
	58	8	100.000	1	0	0	0	0	0	0	0	F	0	
	59	9	100.000	1	0	0	0	0	0	0	0	F	0	
	60	10	100.000	1	1	0	0	0	0	0	0	F	0	

Comments: North Creek Analytical - Portland

Ceriodaphnia Survival and Reproduction Test-48 Hr Survival

Start Date:	9/9/99	Test ID:	2657	Sample ID:	N/AP-Not applicable
End Date:	9/16/99	Lab ID:	WAPTL-Parametrix Tox Lab	Sample Type:	EFF2-Industrial
Sample Date:	9/8/99	Protocol:	EPAF 94-EPA Freshwater	Test Species:	CD-Ceriodaphnia dubia
Comments:	North Creek Analytical - Portland				

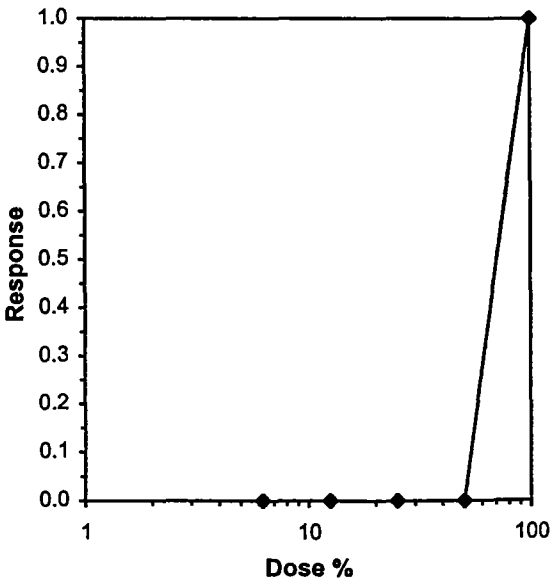
Conc-%	1	2	3	4	5	6	7	8	9	10
D-Control	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.25	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12.5	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
25	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
50	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Conc-%	Mean	N-Mean	Resp	Not Resp	Total	N	Fisher's Exact P	1-Tailed Critical	Number Resp	Total Number
D-Control	1.0000	1.0000	0	10	10	10			0	10
6.25	1.0000	1.0000	0	10	10	10	1.0000	0.0500	0	10
12.5	1.0000	1.0000	0	10	10	10	1.0000	0.0500	0	10
25	1.0000	1.0000	0	10	10	10	1.0000	0.0500	0	10
50	1.0000	1.0000	0	10	10	10	1.0000	0.0500	0	10
100	0.0000	0.0000	10	0	10	10			10	10

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Fisher's Exact Test	50	100	70.7107	2

Graphical Method

Trim Level	EC50
0.0%	70.711
	70.711



ToxCalc v5.0.23

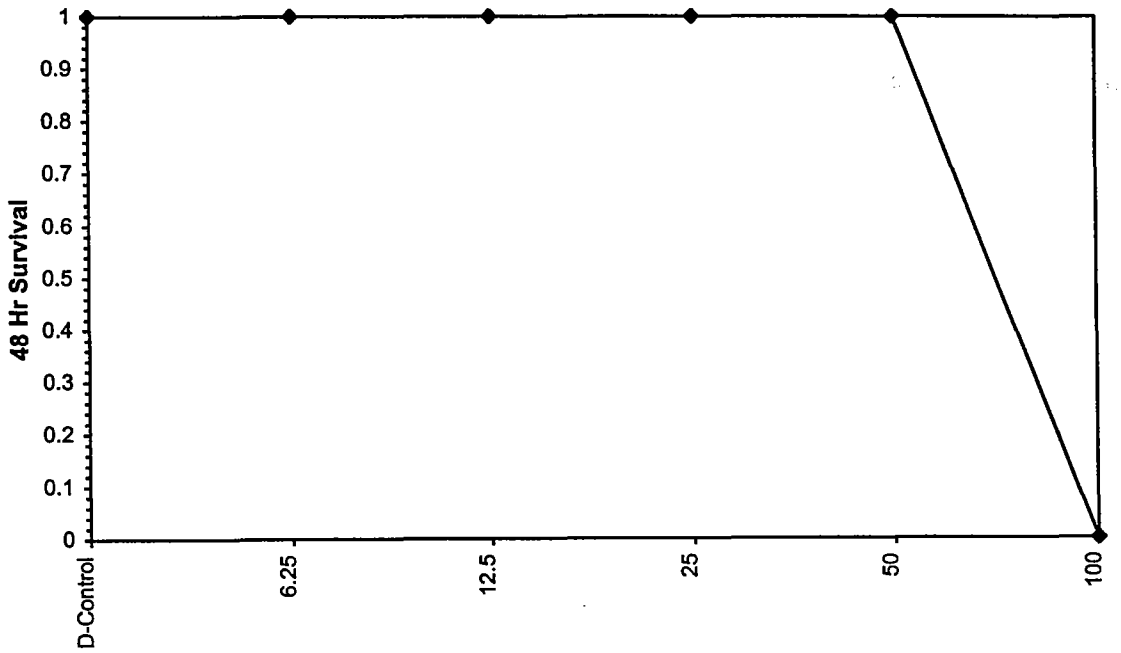
Reviewed by: JL

SCOEPA00018874

Ceriodaphnia Survival and Reproduction Test-48 Hr Survival

Start Date:	9/9/99	Test ID:	2657	Sample ID:	N/AP-Not applicable
End Date:	9/16/99	Lab ID:	WAPTL-Parametrix Tox Lab	Sample Type:	EFF2-Industrial
Sample Date:	9/8/99	Protocol:	EPAF 94-EPA Freshwater	Test Species:	CD-Ceriodaphnia dubia
Comments:	North Creek Analytical - Portland				

Dose-Response Plot



ToxCalc v5.0.23

Reviewed by: _____

SCOEPA00018875

Ceriodaphnia Survival and Reproduction Test-7 Day Survival

Start Date:	9/9/99	Test ID:	2657	Sample ID:	N/AP-Not applicable
End Date:	9/16/99	Lab ID:	WAPTL-Parametrix Tox Lab	Sample Type:	EFF2-Industrial
Sample Date:	9/8/99	Protocol:	EPAF 94-EPA Freshwater	Test Species:	CD-Ceriodaphnia dubia
Comments:	North Creek Analytical - Portland				

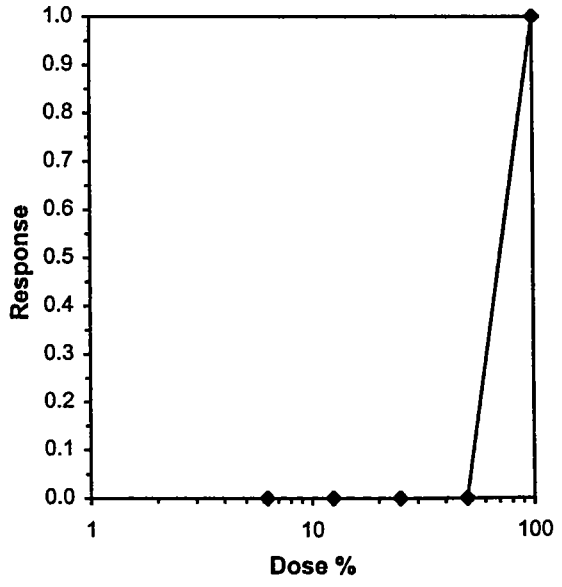
Conc-%	1	2	3	4	5	6	7	8	9	10
D-Control	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.25	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12.5	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
25	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
50	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Conc-%	Mean	N-Mean	Resp	Not Resp	Total	N	Fisher's Exact P	1-Tailed Critical	Number Resp	Total Number
D-Control	1.0000	1.0000	0	10	10	10			0	10
6.25	1.0000	1.0000	0	10	10	10	1.0000	0.0500	0	10
12.5	1.0000	1.0000	0	10	10	10	1.0000	0.0500	0	10
25	1.0000	1.0000	0	10	10	10	1.0000	0.0500	0	10
50	1.0000	1.0000	0	10	10	10	1.0000	0.0500	0	10
100	0.0000	0.0000	10	0	10	10			10	10

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Fisher's Exact Test	50	100	70.7107	2

Graphical Method

Trim Level	EC50
0.0%	70.711
	70.711



ToxCalc v5.0.23

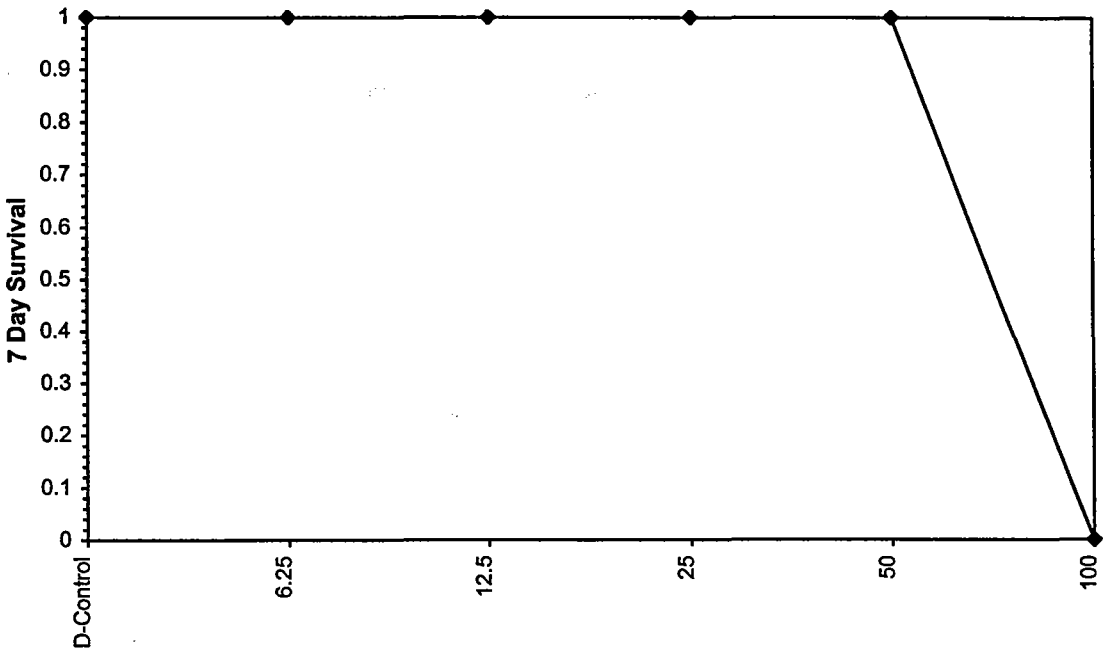
Reviewed by: JC

SCOEPA00018876

Ceriodaphnia Survival and Reproduction Test-7 Day Survival

Start Date:	9/9/99	Test ID:	2657	Sample ID:	N/AP-Not applicable
End Date:	9/16/99	Lab ID:	WAPTL-Parametrix Tox Lab	Sample Type:	EFF2-Industrial
Sample Date:	9/8/99	Protocol:	EPAF 94-EPA Freshwater	Test Species:	CD-Ceriodaphnia dubia
Comments:	North Creek Analytical - Portland				

Dose-Response Plot



ToxCalc v5.0.23

Reviewed by: JC

Ceriodaphnia Survival and Reproduction Test-Reproduction

Start Date:	9/9/99	Test ID:	2657	Sample ID:	N/AP-Not applicable
End Date:	9/16/99	Lab ID:	WAPTL-Parametrix Tox Lab	Sample Type:	EFF2-Industrial
Sample Date:	9/8/99	Protocol:	EPAF 94-EPA Freshwater	Test Species:	CD-Ceriodaphnia dubia
Comments:	North Creek Analytical - Portland				

Conc-%	1	2	3	4	5	6	7	8	9	10
D-Control	38.000	26.000	26.000	14.000	25.000	21.000	10.000	14.000	8.000	15.000
6.25	23.000	21.000	25.000	32.000	8.000	19.000	31.000	33.000	33.000	19.000
12.5	22.000	21.000	41.000	26.000	18.000	27.000	34.000	26.000	23.000	22.000
25	19.000	20.000	5.000	19.000	20.000	12.000	22.000	19.000	31.000	27.000
50	14.000	15.000	22.000	15.000	15.000	19.000	13.000	21.000	14.000	14.000
100	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

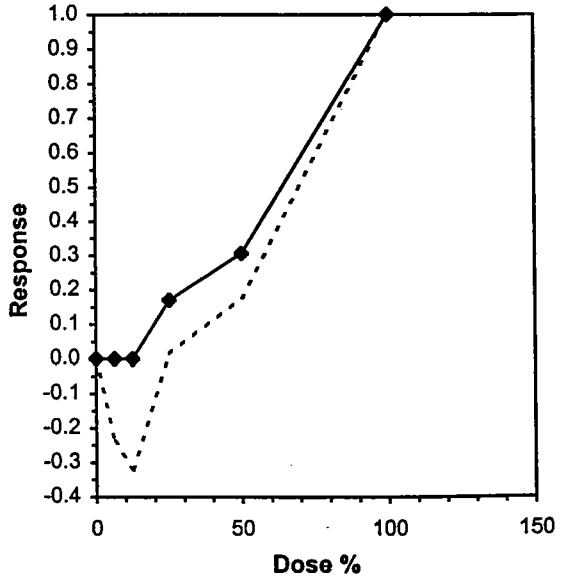
			Transform: Untransformed						1-Tailed		Isotonic	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD	Mean	N-Mean
D-Control	19.700	1.0000	19.700	8.000	38.000	46.711	10				23.367	1.0000
6.25	24.400	1.2386	24.400	8.000	33.000	33.194	10	-1.461	2.223	7.152	23.367	1.0000
12.5	26.000	1.3198	26.000	18.000	41.000	26.274	10	-1.958	2.223	7.152	23.367	1.0000
25	19.400	0.9848	19.400	5.000	31.000	36.948	10	0.093	2.223	7.152	19.400	0.8302
50	16.200	0.8223	16.200	13.000	22.000	19.907	10	1.088	2.223	7.152	16.200	0.6933
100	0.000	0.0000	0.000	0.000	0.000	0.000	10				0.000	0.0000

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.98148	0.93	0.19483	0.54657
Bartlett's Test indicates equal variances (p = 0.08)	8.48876	13.2767		

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU	MSDu	MSDp	MSB	MSE	F-Prob	df
Dunnett's Test	50	100	70.7107	2	7.15239	0.36307	159.38	51.7444	0.0252	4, 45

Linear Interpolation (200 Resamples)

Point	%	SD	95% CL		Skew
IC05	16.182	4.500	13.882	29.621	1.2973
IC10	19.863	5.622	15.837	34.905	0.9715
IC15	23.545	7.015	17.575	40.026	0.6896
IC20	30.521	8.949	19.594	50.535	0.3544
IC25	39.648	10.131	21.367	53.626	-0.2871
IC40	56.728	4.294	48.020	62.901	-2.4921
IC50	63.940	2.951	57.192	69.084	-0.4840



ToxCalc v5.0.23

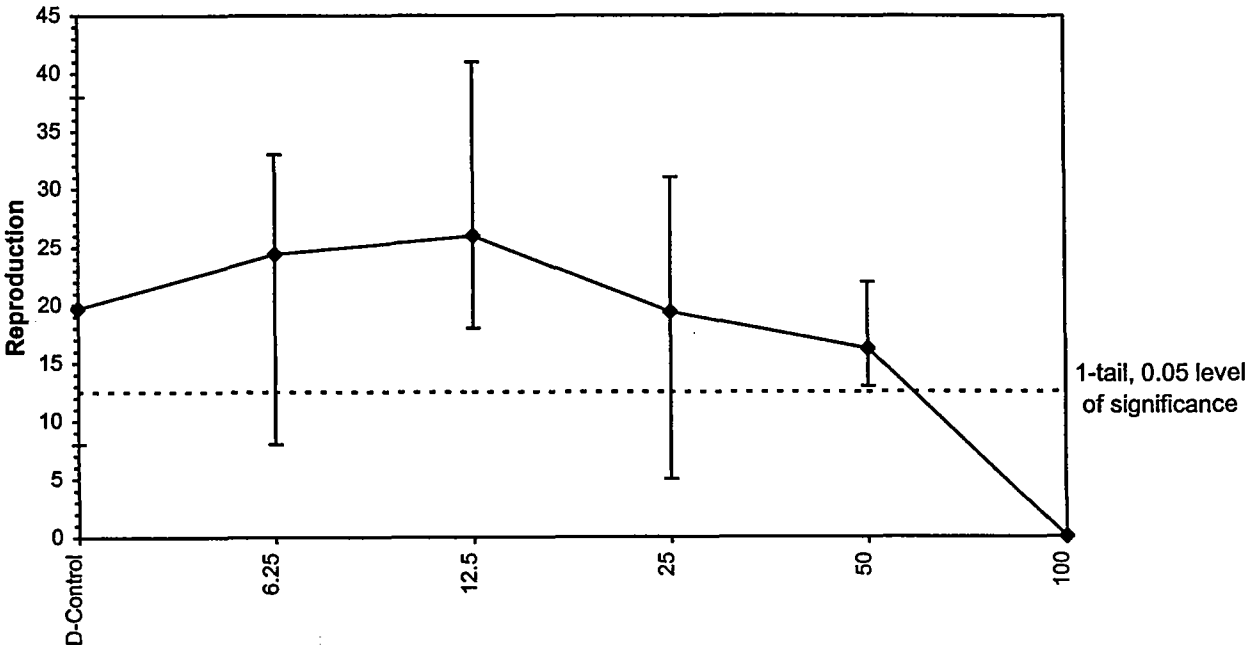
Reviewed by: JC

SCOEPA00018878

Ceriodaphnia Survival and Reproduction Test-Reproduction

Start Date:	9/9/99	Test ID:	2657	Sample ID:	N/AP-Not applicable
End Date:	9/16/99	Lab ID:	WAPTL-Parametrix Tox Lab	Sample Type:	EFF2-Industrial
Sample Date:	9/8/99	Protocol:	EPAF 94-EPA Freshwater	Test Species:	CD-Ceriodaphnia dubia
Comments:	North Creek Analytical - Portland				

Dose-Response Plot



ToxCalc v5.0.23

Reviewed by: JL

APPENDIX B

DUAL ENDPOINT *Pimephales promelas* BIOASSAY DATA

Parametrix, Inc.
Environmental Toxicology Laboratory

Pimephales promelas
CHRONIC DAILY MONITORING

Client: NCA-Portland Collection Dates: 9/8/99, 9/10, 9/13

Sample: Effluent Test Dates: 9/9/99 - 9/16/99

	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Temp (°C)	25	25	25	25	25	25	25	25

% Conc.	pH Initial	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial (4)	Final	Final
Control	8.1	8.0	6.9	8.1	7.8	8.1	7.5	7.6	7.6	7.8	7.8	7.8	7.5	7.7
6.25	8.0	8.1	6.9	8.0	7.8	8.0	7.6	7.6	7.6	7.8	7.8	7.8	7.5	7.7
12.5	8.0	8.1	6.9	8.0	7.7	8.0	7.7	7.6	7.6	7.8	7.7	7.9	7.5	7.7
25	8.0	8.0	7.0	8.0	7.7	7.9	7.6	7.6	7.5	7.7	7.7	7.7	7.5	7.7
50	7.9	7.8	6.4	7.8	7.5	7.8	7.4	7.5	7.5	7.6	7.5	7.7	7.5	7.5
100	7.6 (1)	7.3	6.1 (2)	7.3	7.2	7.3	7.2	7.3	7.3	7.2	7.0	7.6	7.0	7.0

	Dissolved Oxygen (mg/L) Initial	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial (4)	Final	Final
Control	8.1	8.2	6.9	7.8	7.1	8.0	7.3	8.2	7.6	8.1	7.5	7.8	7.0	7.6
6.25	8.1	8.3	6.9	7.9	7.4	7.6	5.8	8.0	7.6	8.0	7.5	7.8	7.0	7.6
12.5	8.2	8.3	6.9	7.8	7.0	7.7	6.8	8.0	7.6	7.8	7.4	7.8	7.0	7.6
25	8.2	8.3	7.0	7.8	7.1	7.8	6.4	8.0	7.5	8.0	7.2	7.8	6.9	7.7
50	8.2	8.3	6.4	7.8	6.6	7.7	6.3	8.1	7.5	7.5	6.7	7.6	6.9	7.2
100	8.3	8.3	6.1	7.8	6.9	7.7	6.8	8.1	7.3 (3)	7.5	6.3	7.3	6.3	7.2

	Specific Conductivity (µS) Initial	1	2	3	4	5	6	Final
Control	310	325	328	328	347	327	333	338
100%	882	886	823	809	874	869	901	912

Sample #	1	1	#2	2	2	#3	3	
Initials	AC	JB	JB	[illegible]	[illegible]	[illegible]	[illegible]	JM
Date	9/9	9/10	9/10	9/11	9/11	9/12	9/12	9/13	9/13	9/14	9/14	9/15	9/15	9/16

NT = Not Taken
Shading indicates areas where data collection is not required.

Comments: (1) DC, should read 7.3, AC
(2) should read: 7.8, 7.8, 8.0, 7.6, 7.6, 7.3 JB
(3) DC, should read: 7.6, 7.2, 7.1, 7.3, 6.9, 6.9 [illegible] 9/13/99
(4) DC [illegible] 9/15 Initial readings for Day 6 inverted columns. pH is in DO column and vice versa.

[illegible] 9/20/99

SCOEPA00018881

Parametrix, Inc.
Environmental Toxicology Laboratory

Parametrix, Inc.
5808 Lake Washington Blvd. N.E.
Kirkland, WA 98033

Pimephales promelas
Chronic Daily Survival

Client: NCA-Portland
Sample I.D./Source: Effluent
Dilution Media: 90H
Test Initiation Time: 1400 ⊛
Organism Source/Age: ABS ≤ 24 hr
Test Dates: 9/9/99 – 9/16/99

Conc.	Rep.	No. of Survivors 0	24	48	72	96	120	144	168
Control	A 11	10	10	10	10	10	10	10	10
	B 18	10	10	10	10	10	10	10	10
	C 13	10	10	10	10	10	10	10	10
	D 6	10	10	10	10	10	10	10	10
6.25	A 2	10	10	10	10	~~8-2~~ ①	9	9	9
	B 5	10	10	10	10	10	10	10	10
	C 8	10	10	10	10	10	10	10	10
	D 24	10	10	10	10	10	10	10	10
12.5	A 14	10	10	10	10	10	10	10	10
	B 1	10	10	10	10	10	10	10	10
	C 21	10	10	10	10	9-1	9	9	8-1
	D 17	10	10	10	9-1	9	9	9	9
25	A 3	10	10	10	10	10	10	10	10
	B 12	10	10	10	10	10	10	10	10
	C 4	10	10	9-1	9	8-1	8	8	8
	D 22	10	10	10	10	10	10	9-1	9
50	A 20	10	10	8-2	8	8	8	8	8
	B 15	10	10	10	10	10	10	10	10
	C 10	10	10	10	10	10	10	9-1	9
	D 7	10	10	10	10	10	9-1	9	9
100	A 16	10	4-6	3-1	3	3	3	3	3
	B 9	10	7-3	5-2	4-1	3-1	3	3	3
	C 19	10	9-1	6-3	4-2	~~4-1~~ ②	3	3	3
	D 23	10	9-1	9	9	8-1	7-1	5-2	5
	A								
	B								
	C								
	D								
	A								
	B								
	C								
	D								
Initials		AC	JB	[illegible]	[illegible]	pm	HR	pm	JU
Date		9/9/99	9/10/99	9/11	9/12	9/13	9/14	9/15	9/16

Comments
① DC: Should read 9-1, pm, 9/13/99
② DC: Should read 3-1, pm, 9/13/99
⊛ DC should read ≤ 24 hr, cat, 10/5/99

Parametrix, Inc.
Environmental Toxicology Laboratory

7-DAY CHRONIC *Pimephales promelas* BIOMASS DATA

Client: NCA-Portland Client No.: 55-1945-12

Conc./Rep.	Pan No.	Foil weight (mg)	Foil & Organism weight (mg)	Organism weight (mg)
Con A	1	10.66	13.97	
Con B	2	9.33	13.56	
Con C	3	9.21	12.45	
Con D	4	9.62	12.88	
6.25 A	5	9.70	12.96	
B	6	8.60	12.71	
C	7	8.90	12.45	
D	8	9.60	13.58	
12.5 A	9	10.01	13.91	
B	10	8.69	11.96	
C	11	8.57	12.18	
D	12	9.12	13.33	
25 A	13	11.02	14.64	
B	14	9.73	13.53	
C	15	9.51	13.06	
D	16	10.67	14.33	
50 A	17	9.11	11.33	
B	18	8.13	11.45	
C	19	8.04	11.79	
D	20	9.05	11.87	
100 A	21	9.13	9.53	
B	22	8.64	8.96	
C	23	8.09	8.66	
D	24	9.40	9.78	

Comments: Calibration = 0.0101

gm

Rev. 1/30/97

Client Name:				
Date:				
random #	test chambers			
19	11			
2	18			
18	13			
3	6			
5	2			
23	5			
21	8			
16	24			
20	14			
17	1			
12	21			
19	17			
3	3			
4	12			
17	4			
6	22			
24	20			
20	15			
23	10			
10	7			
12	16			
11	9			
23	19			
12	23			

Test: LF-Larval Fish Growth and Survival Test
Test ID: 2658
Species: PP-Pimephales promelas
Protocol: EPAF 94-EPA Freshwater
Sample ID: N/AP-Not applicable
Sample Type: EFF2-Industrial
Start Date: 9/9/99 End Date: 9/16/99
Lab ID: WAPTL-Parametrix Tox Lab

Pos	ID	Rep	Group	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Total Wgt(mg)	Tare Wgt(mg)	Wgt Count
	1	1	D-Control	10	10	10	10	10	10	10	10	13.97	10.66	
	2	2	D-Control	10	10	10	10	10	10	10	10	13.56	9.33	
	3	3	D-Control	10	10	10	10	10	10	10	10	12.45	9.21	
	4	4	D-Control	10	10	10	10	10	10	10	10	12.88	9.62	
	5	1	6.250	10	10	10	10	9	9	9	9	12.96	9.7	
	6	2	6.250	10	10	10	10	10	10	10	10	12.71	8.6	
	7	3	6.250	10	10	10	10	10	10	10	10	12.45	8.9	
	8	4	6.250	10	10	10	10	10	10	10	10	13.58	9.6	
	9	1	12.500	10	10	10	10	10	10	10	10	13.91	10.01	
	10	2	12.500	10	10	10	10	10	10	10	10	11.96	8.69	
	11	3	12.500	10	10	10	10	9	9	9	8	12.18	8.57	
	12	4	12.500	10	10	10	9	9	9	9	9	13.33	9.12	
	13	1	25.000	10	10	10	10	10	10	10	10	14.64	11.02	
	14	2	25.000	10	10	10	10	10	10	10	10	13.53	9.73	
	15	3	25.000	10	10	9	9	8	8	8	8	13.06	9.51	
	16	4	25.000	10	10	10	10	10	10	9	9	14.33	10.67	
	17	1	50.000	10	10	8	8	8	8	8	8	11.33	9.11	
	18	2	50.000	10	10	10	10	10	10	10	10	11.45	8.13	
	19	3	50.000	10	10	10	10	10	10	9	9	11.79	8.04	
	20	4	50.000	10	10	10	10	10	9	9	9	11.87	9.05	
	21	1	100.000	10	4	3	3	3	3	3	3	9.53	9.13	
	22	2	100.000	10	7	5	4	3	3	3	3	8.96	8.64	
	23	3	100.000	10	9	6	4	3	3	3	3	8.66	8.09	
	24	4	100.000	10	9	9	9	8	7	5	5	9.78	9.4	

Comments: North Creek Analytical - Portland

Larval Fish Growth and Survival Test-48 Hr Survival

Start Date:	9/9/99	Test ID:	2658	Sample ID:	N/AP-Not applicable
End Date:	9/16/99	Lab ID:	WAPTL-Parametrix Tox Lab	Sample Type:	EFF2-Industrial
Sample Date:	9/8/99	Protocol:	EPAF 94-EPA Freshwater	Test Species:	PP-Pimephales promelas
Comments:	North Creek Analytical - Portland				

Conc-%	1	2	3	4
D-Control	1.0000	1.0000	1.0000	1.0000
6.25	1.0000	1.0000	1.0000	1.0000
12.5	1.0000	1.0000	1.0000	1.0000
25	1.0000	1.0000	0.9000	1.0000
50	0.8000	1.0000	1.0000	1.0000
100	0.3000	0.5000	0.6000	0.9000

			Transform: Arcsin Square Root					Rank	1-Tailed	Number	Total
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical	Resp	Number
D-Control	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	4			0	40
6.25	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	4	18.00	10.00	0	40
12.5	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	4	18.00	10.00	0	40
25	0.9750	0.9750	1.3713	1.2490	1.4120	5.942	4	16.00	10.00	1	40
50	0.9500	0.9500	1.3358	1.1071	1.4120	11.411	4	16.00	10.00	2	40
*100	0.5750	0.5750	0.8750	0.5796	1.2490	32.005	4	10.00	10.00	17	40

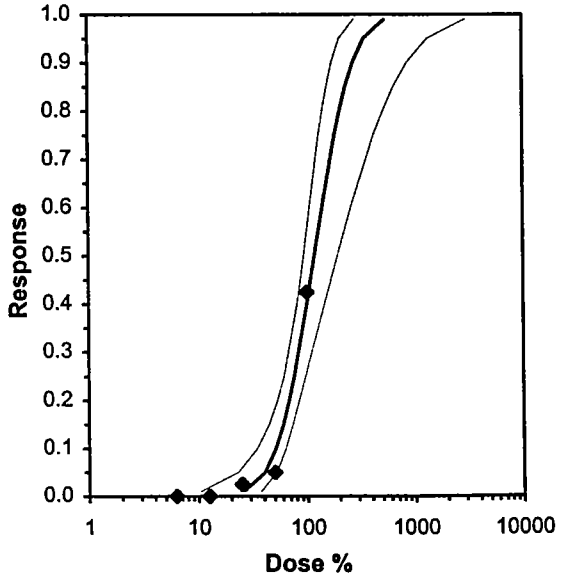
Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.773	0.884	0.38334	5.14075
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Steel's Many-One Rank Test	50	100	70.7107	2

Maximum Likelihood-Probit

Parameter	Value	SE	95% Fiducial Limits		Control	Chi-Sq	Critical	P-value	Mu	Sigma	Iter
Slope	3.52544	0.82349	1.9114	5.13948	0	2.26935	7.81472	0.52	2.07289	0.28365	4
Intercept	-2.3079	1.54054	-5.3273	0.7116							
TSCR											

Point	Probits	%	95% Fiducial Limits	
EC01	2.674	25.8831	10.395	37.289
EC05	3.355	40.3947	22.9978	51.9826
EC10	3.718	51.2124	34.4821	63.199
EC15	3.964	60.1041	44.4885	73.4497
EC20	4.158	68.2595	53.4416	84.3694
EC25	4.326	76.1325	61.4286	96.7501
EC40	4.747	100.237	81.4735	146.312
EC50	5.000	118.274	93.7736	193.222
EC60	5.253	139.558	106.83	257.799
EC75	5.674	183.743	131.19	421.066
EC80	5.842	204.936	142.021	512.691
EC85	6.036	232.744	155.63	645.567
EC90	6.282	273.153	174.433	863.653
EC95	6.645	346.304	206.248	1331.49
EC99	7.326	540.462	281.578	3007.96



ToxCalc v5.0.23

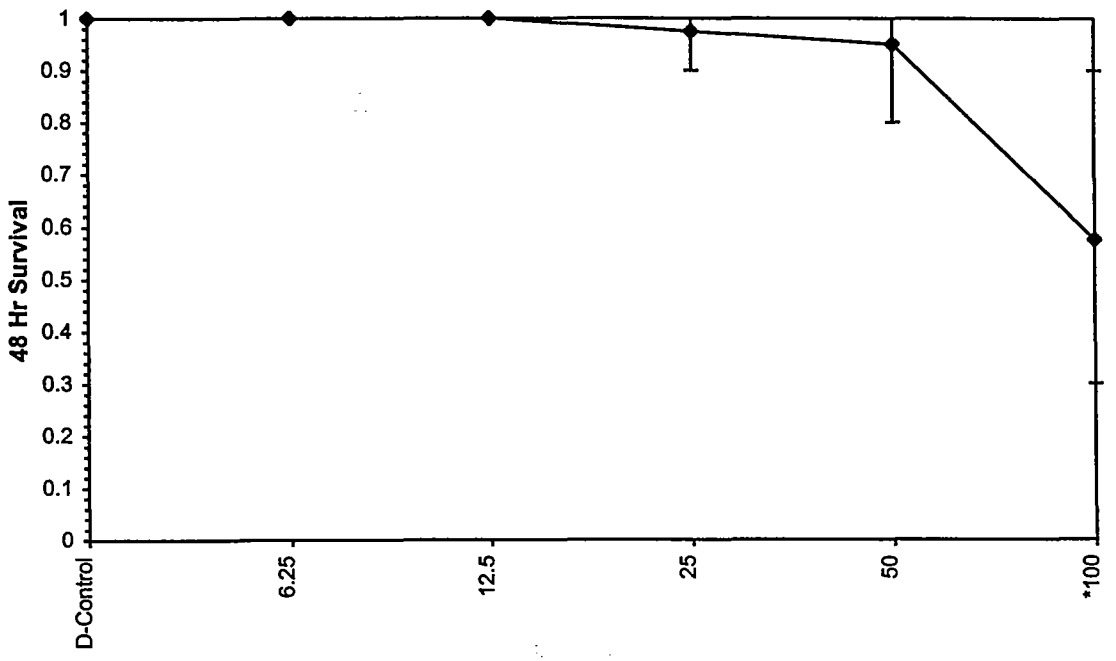
Reviewed by: JC

SCOEPA00018886

Larval Fish Growth and Survival Test-48 Hr Survival

Start Date:	9/9/99	Test ID:	2658	Sample ID:	N/AP-Not applicable
End Date:	9/16/99	Lab ID:	WAPTL-Parametrix Tox Lab	Sample Type:	EFF2-Industrial
Sample Date:	9/8/99	Protocol:	EPAF 94-EPA Freshwater	Test Species:	PP-Pimephales promelas
Comments:	North Creek Analytical - Portland				

Dose-Response Plot



ToxCalc v5.0.23

Reviewed by: JC

SCOEPA00018887

Larval Fish Growth and Survival Test-7 Day Survival

Start Date:	9/9/99	Test ID:	2658	Sample ID:	N/AP-Not applicable
End Date:	9/16/99	Lab ID:	WAPTL-Parametrix Tox Lab	Sample Type:	EFF2-Industrial
Sample Date:	9/8/99	Protocol:	EPAF 94-EPA Freshwater	Test Species:	PP-Pimephales promelas
Comments:	North Creek Analytical - Portland				

Conc-%	1	2	3	4
D-Control	1.0000	1.0000	1.0000	1.0000
6.25	0.9000	1.0000	1.0000	1.0000
12.5	1.0000	1.0000	0.8000	0.9000
25	1.0000	1.0000	0.8000	0.9000
50	0.8000	1.0000	0.9000	0.9000
100	0.3000	0.3000	0.3000	0.5000

			Transform: Arcsin Square Root					Rank	1-Tailed	Number	Total
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical	Resp	Number
D-Control	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	4			0	40
6.25	0.9750	0.9750	1.3713	1.2490	1.4120	5.942	4	16.00	10.00	1	40
12.5	0.9250	0.9250	1.2951	1.1071	1.4120	11.347	4	14.00	10.00	3	40
25	0.9250	0.9250	1.2951	1.1071	1.4120	11.347	4	14.00	10.00	3	40
50	0.9000	0.9000	1.2543	1.1071	1.4120	9.935	4	12.00	10.00	4	40
*100	0.3500	0.3500	0.6311	0.5796	0.7854	16.302	4	10.00	10.00	26	40

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.94161	0.884	-0.2255	-0.4667
Equality of variance cannot be confirmed				

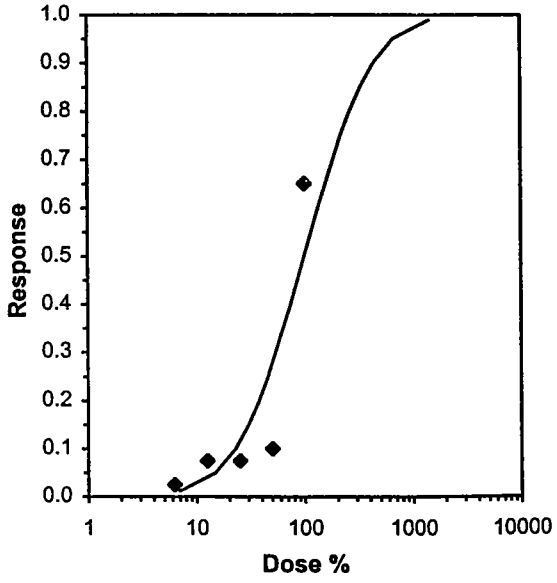
Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Steel's Many-One Rank Test	50	100	70.7107	2

Maximum Likelihood-Probit

Parameter	Value	SE	95% Fiducial Limits		Control	Chi-Sq	Critical	P-value	Mu	Sigma	Iter
Slope	1.99338	0.74156	-0.3666	4.35336	0	13.4362	7.81472	3.8E-03	1.99812	0.50166	4
Intercept	1.01699	1.24995	-2.9609	4.9949							
TSCR											

Point	Probits	%	95% Fiducial Limits
EC01	2.674	6.77769	
EC05	3.355	14.8922	
EC10	3.718	22.6576	
EC15	3.964	30.0733	
EC20	4.158	37.6626	
EC25	4.326	45.6828	
EC40	4.747	74.3059	
EC50	5.000	99.5675	
EC60	5.253	133.417	
EC75	5.674	217.011	
EC80	5.842	263.224	
EC85	6.036	329.651	
EC90	6.282	437.543	
EC95	6.645	665.694	
EC99	7.326	1462.69	

Significant heterogeneity detected (p = 3.78E-03)



ToxCalc v5.0.23

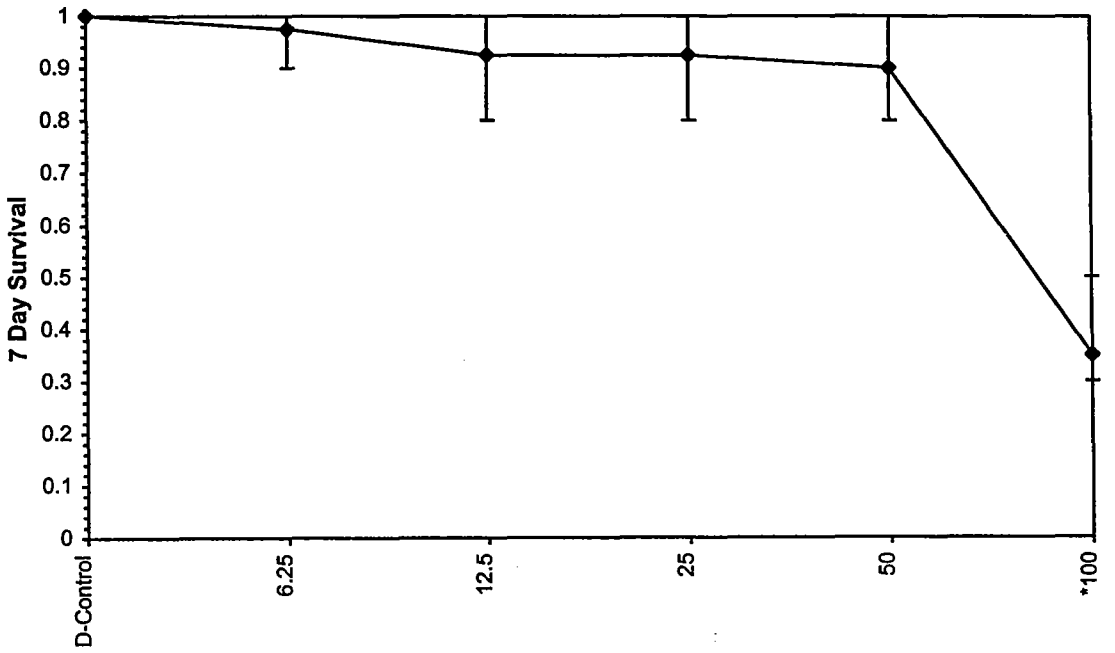
Reviewed by: JC

SCOEPA00018888

Larval Fish Growth and Survival Test-7 Day Survival

Start Date:	9/9/99	Test ID:	2658	Sample ID:	N/AP-Not applicable
End Date:	9/16/99	Lab ID:	WAPTL-Parametrix Tox Lab	Sample Type:	EFF2-Industrial
Sample Date:	9/8/99	Protocol:	EPAF 94-EPA Freshwater	Test Species:	PP-Pimephales promelas
Comments:	North Creek Analytical - Portland				

Dose-Response Plot



ToxCalc v5.0.23

Reviewed by: _____

SCOEPA00018889

Larval Fish Growth and Survival Test-7 Day Biomass

Start Date:	9/9/99	Test ID:	2658	Sample ID:	N/AP-Not applicable
End Date:	9/16/99	Lab ID:	WAPTL-Parametrix Tox Lab	Sample Type:	EFF2-Industrial
Sample Date:	9/8/99	Protocol:	EPAF 94-EPA Freshwater	Test Species:	PP-Pimephales promelas
Comments:	North Creek Analytical - Portland				

Conc-%	1	2	3	4
D-Control	0.3310	0.4230	0.3240	0.3260
6.25	0.3260	0.4110	0.3550	0.3980
12.5	0.3900	0.3270	0.3610	0.4210
25	0.3620	0.3800	0.3550	0.3660
50	0.2220	0.3320	0.3750	0.2820
100	0.0400	0.0320	0.0570	0.0380

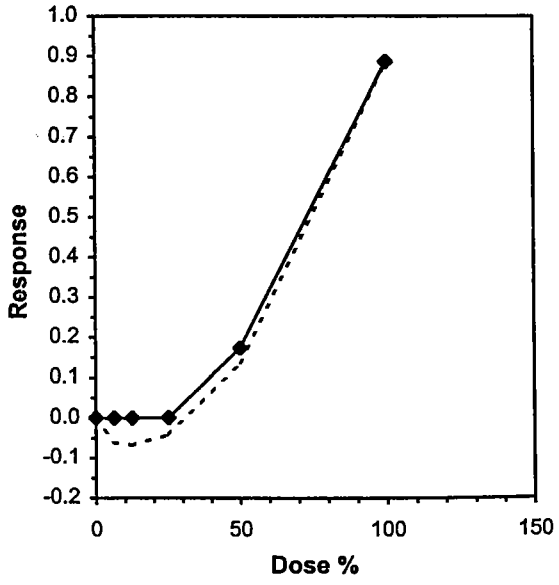
			Transform: Untransformed						1-Tailed		Isotonic	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD	Mean	N-Mean
D-Control	0.3510	1.0000	0.3510	0.3240	0.4230	13.701	4				0.3661	1.0000
6.25	0.3725	1.0613	0.3725	0.3260	0.4110	10.513	4	-0.744	2.410	0.0697	0.3661	1.0000
12.5	0.3748	1.0677	0.3748	0.3270	0.4210	10.719	4	-0.822	2.410	0.0697	0.3661	1.0000
25	0.3658	1.0420	0.3658	0.3550	0.3800	2.879	4	-0.510	2.410	0.0697	0.3658	0.9991
50	0.3028	0.8625	0.3028	0.2220	0.3750	21.766	4	1.669	2.410	0.0697	0.3028	0.8270
*100	0.0418	0.1189	0.0418	0.0320	0.0570	25.676	4	10.698	2.410	0.0697	0.0418	0.1140

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.97219	0.884	0.15998	0.39377
Bartlett's Test indicates equal variances (p = 0.05)	11.2373	15.0863		

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU	MSDu	MSDp	MSB	MSE	F-Prob	df
Dunnett's Test	50	100	70.7107	2	0.06967	0.19848	0.06757	0.00167	3.6E-09	5, 18

Linear Interpolation (200 Resamples)

Point	%	SD	95% CL(Exp)		Skew
IC05	32.131	9.556	0.000	62.450	-0.5032
IC10	39.395	8.074	19.988	62.784	-0.1237
IC15	46.658	7.338	25.527	63.119	-0.6406
IC20	51.893	6.066	29.919	64.670	-0.5755
IC25	55.400	5.315	35.702	67.267	-0.6438
IC40	65.920	4.085	51.206	74.951	-0.6867
IC50	72.933	3.283	61.022	80.075	-0.6684



ToxCalc v5.0.23

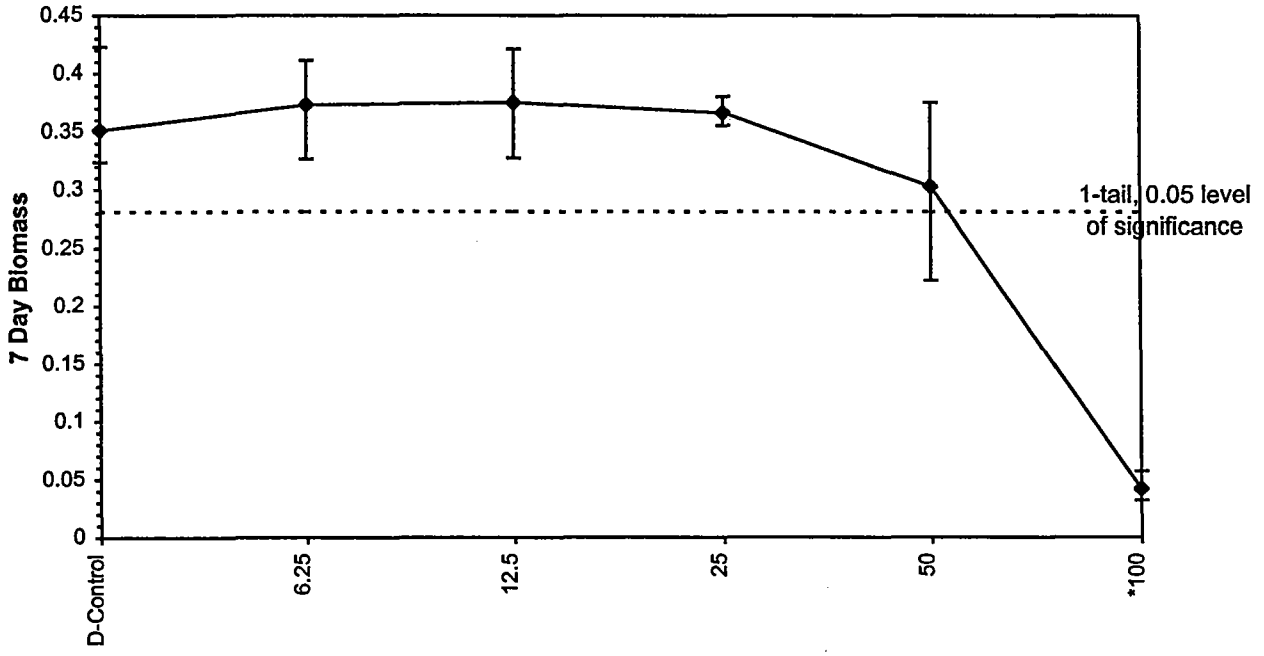
Reviewed by: JL

SCOEPA00018890

Larval Fish Growth and Survival Test-7 Day Biomass

Start Date:	9/9/99	Test ID:	2658	Sample ID:	N/AP-Not applicable
End Date:	9/16/99	Lab ID:	WAPTL-Parametrix Tox Lab	Sample Type:	EFF2-Industrial
Sample Date:	9/8/99	Protocol:	EPAF 94-EPA Freshwater	Test Species:	PP-Pimephales promelas
Comments:	North Creek Analytical - Portland				

Dose-Response Plot



ToxCalc v5.0.23

Reviewed by: JL

SCOEPA00018891

APPENDIX C

REFERENCE TOXICANT DATA

Parametrix, Inc.
Environmental Toxicology Laboratory

Ceriodaphnia dubia
Chronic Daily Survival and Offspring

IN-HOUSE

Client: Reftox Client Number: na Test Dates: 8/31/99 - 9/7/99

Sample I.D./Source: NaCl Sample Collection Dates: na Dilution Media: ~~92 H~~ Trout Water

Temperature (°C) 0 25 24 25 48 25 72 25 96 25 120 25 144 25 168 25

Conc.	Rep.	Survival (hours) 0	24	48	72	96	120	144	168		Offspring (hours) 72	96	120	144	168		Total
CON	A	1	1	1	1	1	1	1	1		0	5	6	5	1		17
	B	1	1	1	1	1	1	1	1		0	~~8~~ 5	6	6	0		17
	C	1	1	1	1	1	1	1	1		4	0	7	10	0		21
	D	1	1	1	1	1	1	1	1		2	5	5	5	0		17
	E	1	1	1	1	1	1	1	1		0	4	6	0	7		17
	F	1	1	1	1	1	1	1	1		0	6	7	6	0		19
	G	1	1	1	1	1	1	1	1		0	5	10	7	0		22
	H	1	1	1	1	1	1	1	1		0	~~8~~ 6	7	7	0		20
	I	1	1	1	1	1	1	1	1		0	8	7	6	0		21
	J	1	1	1	1	1	1	1	1		0	6	6	5	0		17
0.3125 g/L	A	1	1	1	1	1	1	1	1		0	5	0	0	0		5
	B	1	1	1	1	1	1	1	1		4	0	5	7	0		16
	C	1	1	1	1	1	1	1	1		0	3	6	5	0		14
	D	1	1	1	1	1	1	1	1		4	1	8	4	0		17
	E	1	1	1	1	1	1	1	1		0	5	9	6	0		20
	F	1	1	1	1	1	1	1	1		0	5	5	9	0		19
	G	1	1	1	1	1	1	1	1		4	0	8	9	0		21
	H	1	1	1	1	1	1	1	1		0	3	8	8	0		19
	I	1	1	1	1	1	1	1	1		2	0	8	7	0		17
	J	1	1	1	1	1	1	1	1		6	0	7	6	0		19
0.625 g/L	A	1	1	1	1	1	1	1	1		5	0	8	5	0		18
	B	1	1	1	1	1	1	1	1		0	6	10	6	0		22
	C	1	1	1	1	1	1	1	1		0	4	6	7	0		17
	D	1	1	1	1	1	1	1	1		0	7	7	5	0		19
	E	1	1	1	1	1	1	1	1		0	6	5	7	0		18
	F	1	1	1	1	1	1	1	1		5	0	5	8	0		18
	G	1	1	1	1	1	1	1	1		4	0	6	9	0		19
	H	1	1	1	1	1	1	1	1		0	5	6	5	0		16
	I	1	1	1	1	1	1	1	1		0	7	6	7	0		20
	J	1	1	1	1	1	1	1	1		0	5	7	8	0		20

Revised 8/26/99

9/8/99

SCOEPA00018893

Parametrix, Inc.
Environmental Toxicology Laboratory

Ceriodaphnia dubia
Chronic Daily Survival and Offspring

Conc.	Rep.	Survival (hours) 0	24	48	72	96	120	144	168		Offspring (hours) 72	96	120	144	168		Total
1.25 g/L	A	1	1	1	1	1	1	1	1		0	5	5	6	0		16
	B	1	1	1	1	1	1	1	1		0	2	4	4	0		10
	C	1	1	1	1	1	1	1	1		0	4	3	4	0		11 cat
	D	1	1	1	1	1	1	1	1		0	5	8	3	0		~~17~~ 16
	E	1	1	1	1	1	1	1	1		0	4	7	5	0		16
	F	1	1	1	1	1	1	1	1		0	5	6	6	0		17
	G	1	1	1	1	1	1	1	1		0	3	7	6	0		16
	H	1	1	1	1	1	1	1	1		0	4	5	6	0		15
	I	1	1	1	1	1	1	1	1		0	5	5	3	0		13
	J	1	1	1	1	1	1	1	1		0	4	7	7	0		18
2.5 g/L	A	1	1	0-1	0	0	0	0	0		0	0	0	0	0		
	B	1	1	0-1	0						0						
	C	1	1	1	0-1						0						
	D	1	1	0-1	0						0						
	E	1	1	0-1	0						0						
	F	1	1	0-1	0						0						
	G	1	1	0-1	0						0						
	H	1	1	0-1	0						0						
	I	1	1	0-1	0						0						
	J	1	1	0-1	0						0						
5.0	A	1	0	0	0						0						
	B	1	0	0	0						0						
	C	1	0	0	0						0						
	D	1	0	0	0						0						
	E	1	0	0	0						0						
	F	1	0	0	0						0						
	G	1	0	0	0						0						
	H	1	0	0	0						0						
	I	1	0	0	0						0						
	J	1	0	0	0		0	0	0		0		0	0	0		
	Initials	Rm	JB	RS	gm	Rm	AC	AC	RS		gm	Rm	AC	AC	RS		RS
	QC	RS															cat
	Samp #	NA	NA	NA	NA	NA	NA	NA	NA		na	NA	NA	NA	NA		NA
	Time	1600	1700	1730	1530	1700	1500	1830	1650		1600	1700	1500	1830	1650		1700
	Date	8/31	9/1	9/2	9/3	9/4	9/5	9/6	9/7		9/3	9/4	~~9/4~~ 9/5 AC	9/6	9/7		9/7

gl 9/8/99

Revised 8/26/99

Parametrix, Inc.
Environmental Toxicology Laboratory

Ceriodaphnia dubia
Daily Water Quality Parameters

pH Solution																
Date	8/31	9/1	9/1	9/2	9/2	9/3	9/3	9/4	9/4	9/5	9/5	9/6	9/6		9/7	
Day	0	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8
Conc	Initial	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Final
Control	7.6	7.6	8.2	7.6	8.1	7.6	7.7	8.2	8.2	8.2	8.2	8.1	8.2		8.0	
0.3125	7.8	8.0	8.2	7.6	8.1	7.6	7.7	8.2	8.1	8.2	8.2	8.1	8.2		8.2	
0.625	7.8	7.9	8.1	7.7	8.1	7.6	7.7	8.2	8.1	8.2	8.2	8.1	8.2		8.2	
1.25	7.8	7.9	8.1	7.6	8.1	7.6	7.7	8.2	8.1	8.2	8.2	8.1	8.2		8.2	
2.5	7.7	7.9	8.1	7.6	8.1	7.6	7.7	—		—	—	—				
5.0	7.6	7.8	8.1	7.6	—	—	—	—		—	—	—				
Initials	JV	AC	JB	gm	AC	JB	JB	R	R	AC	AC	AC	AC		RS	

Dissolved Oxygen (mg/L) Solution																
Conc.	Initial	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Final
Control	8.3	8.3	8.3	8.3	8.3	8.2	8.2	8.2	8.0	8.3	8.3	8.3	8.3		8.2	
0.3125	8.3	8.3	8.3	8.3	8.2	8.2	8.1	8.1	7.9	8.3	8.3	8.3	8.3		8.2	
0.625	8.3	8.3	8.3	8.2	8.2	8.3	8.1	8.3	7.9	8.3	8.3	8.3	8.3		8.2	
1.25	8.3	8.3	8.3	8.2	8.2	8.3	8.2	8.2	8.0	8.3	8.3	8.3	8.2		8.2	
2.5	8.3	8.3	8.3	8.3	8.3	8.3	8.2	—		—	—	—	—			
5.0	8.3	8.3	8.3	8.3	—	—	—	—		—	—	—	—			
Initials	R	AC	JB	gm	AC	JB	JB	R	R	AC	AC	AC	AC		RS	

Conductivity (μMHOS)								
Conc.	0 Hour	24 Hours	48 Hours	72 Hours	96 Hours	120 Hours	144 Hours	168 Hours
Cont.	594	596	595	592	572	577	588	615
100%	9600	9360	—	—	—	—	—	
Samp #	NA	NA	na	NA	NA	NA	NA	NA
Initials	R	AC	gm	JB	R	AC	AC	RS

Comments: ⊙DC, 9/7, RS pH Final should read = 8.0, 8.0, 8.0, 8.0

JL 9/8/99

Revised 8/26/99

Test: CD-Ceriodaphnia Survival and Reproduction Test
Test ID: REFTOX1029
Species: CD-Ceriodaphnia dubia
Protocol: EPAF 94-EPA Freshwater
Sample ID: REF-Ref Toxicant
Sample Type: NACL-Sodium chloride
Start Date: 8/31/99 End Date: 9/7/99
Lab ID: WAPTL-Parametrix Tox Lab

Pos	ID	Rep	Group	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Sex	Number of Young	Notes
	1	1	D-Control	1	1	1	1	1	1	1	1	F	17	
	2	2	D-Control	1	1	1	1	1	1	1	1	F	17	
	3	3	D-Control	1	1	1	1	1	1	1	1	F	21	
	4	4	D-Control	1	1	1	1	1	1	1	1	F	17	
	5	5	D-Control	1	1	1	1	1	1	1	1	F	17	
	6	6	D-Control	1	1	1	1	1	1	1	1	F	19	
	7	7	D-Control	1	1	1	1	1	1	1	1	F	22	
	8	8	D-Control	1	1	1	1	1	1	1	1	F	20	
	9	9	D-Control	1	1	1	1	1	1	1	1	F	21	
	10	10	D-Control	1	1	1	1	1	1	1	1	F	17	
	11	1	0.313	1	1	1	1	1	1	1	1	F	5	
	12	2	0.313	1	1	1	1	1	1	1	1	F	16	
	13	3	0.313	1	1	1	1	1	1	1	1	F	14	
	14	4	0.313	1	1	1	1	1	1	1	1	F	17	
	15	5	0.313	1	1	1	1	1	1	1	1	F	20	
	16	6	0.313	1	1	1	1	1	1	1	1	F	19	
	17	7	0.313	1	1	1	1	1	1	1	1	F	21	
	18	8	0.313	1	1	1	1	1	1	1	1	F	19	
	19	9	0.313	1	1	1	1	1	1	1	1	F	17	
	20	10	0.313	1	1	1	1	1	1	1	1	F	19	
	21	1	0.625	1	1	1	1	1	1	1	1	F	18	
	22	2	0.625	1	1	1	1	1	1	1	1	F	22	
	23	3	0.625	1	1	1	1	1	1	1	1	F	17	
	24	4	0.625	1	1	1	1	1	1	1	1	F	19	
	25	5	0.625	1	1	1	1	1	1	1	1	F	18	
	26	6	0.625	1	1	1	1	1	1	1	1	F	18	
	27	7	0.625	1	1	1	1	1	1	1	1	F	19	
	28	8	0.625	1	1	1	1	1	1	1	1	F	16	
	29	9	0.625	1	1	1	1	1	1	1	1	F	20	
	30	10	0.625	1	1	1	1	1	1	1	1	F	20	
	31	1	1.250	1	1	1	1	1	1	1	1	F	16	
	32	2	1.250	1	1	1	1	1	1	1	1	F	10	
	33	3	1.250	1	1	1	1	1	1	1	1	F	11	
	34	4	1.250	1	1	1	1	1	1	1	1	F	16	
	35	5	1.250	1	1	1	1	1	1	1	1	F	16	
	36	6	1.250	1	1	1	1	1	1	1	1	F	17	
	37	7	1.250	1	1	1	1	1	1	1	1	F	16	
	38	8	1.250	1	1	1	1	1	1	1	1	F	15	
	39	9	1.250	1	1	1	1	1	1	1	1	F	13	
	40	10	1.250	1	1	1	1	1	1	1	1	F	18	
	41	1	2.500	1	1	0	0	0	0	0	0	F	0	
	42	2	2.500	1	1	0	0	0	0	0	0	F	0	
	43	3	2.500	1	1	1	0	0	0	0	0	F	0	
	44	4	2.500	1	1	0	0	0	0	0	0	F	0	
	45	5	2.500	1	1	0	0	0	0	0	0	F	0	
	46	6	2.500	1	1	0	0	0	0	0	0	F	0	
	47	7	2.500	1	1	0	0	0	0	0	0	F	0	

ToxCalc 5.0
Reviewed by: JL

Test: CD-Ceriodaphnia Survival and Reproduction Test | Test ID: REFTOX1029
Species: CD-Ceriodaphnia dubia | Protocol: EPAF 94-EPA Freshwater
Sample ID: REF-Ref Toxicant | Sample Type: NACL-Sodium chloride
Start Date: 8/31/99 End Date: 9/7/99 | Lab ID: WAPTL-Parametrix Tox Lab

	48	8	2.500	1	1	0	0	0	0	0	0	F	0	
	49	9	2.500	1	1	0	0	0	0	0	0	F	0	
	50	10	2.500	1	1	0	0	0	0	0	0	F	0	
	51	1	5.000	1	0	0	0	0	0	0	0	F	0	
	52	2	5.000	1	0	0	0	0	0	0	0	F	0	
	53	3	5.000	1	0	0	0	0	0	0	0	F	0	
	54	4	5.000	1	0	0	0	0	0	0	0	F	0	
	55	5	5.000	1	0	0	0	0	0	0	0	F	0	
	56	6	5.000	1	0	0	0	0	0	0	0	F	0	
	57	7	5.000	1	0	0	0	0	0	0	0	F	0	
	58	8	5.000	1	0	0	0	0	0	0	0	F	0	
	59	9	5.000	1	0	0	0	0	0	0	0	F	0	
	60	10	5.000	1	0	0	0	0	0	0	0	F	0	

Comments:

Ceriodaphnia Survival and Reproduction Test-48 Hr Survival

Start Date:	8/31/99	Test ID:	REFTOX1029	Sample ID:	REF-Ref Toxicant
End Date:	9/7/99	Lab ID:	WAPTL-Parametrix Tox Lab	Sample Type:	NACL-Sodium chloride
Sample Date:		Protocol:	EPAF 94-EPA Freshwater	Test Species:	CD-Ceriodaphnia dubia
Comments:					

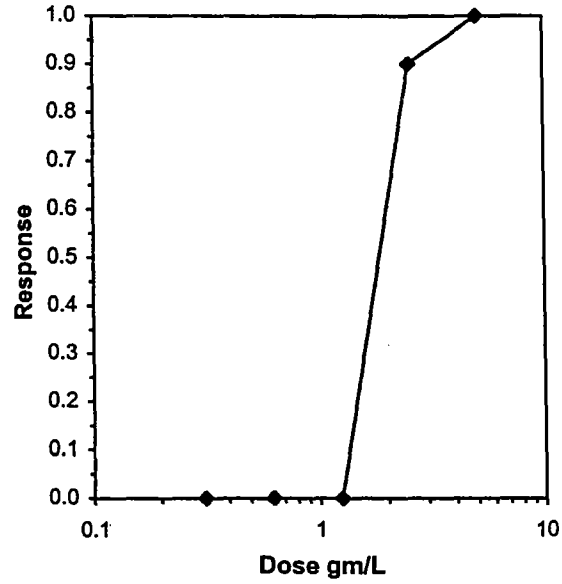
Conc-gm/L	1	2	3	4	5	6	7	8	9	10
D-Control	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.3125	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.625	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.25	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
2.5	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Conc-gm/L	Mean	N-Mean	Resp	Not Resp	Total	N	Fisher's Exact P	1-Tailed Critical	Number Resp	Total Number
D-Control	1.0000	1.0000	0	10	10	10			0	10
0.3125	1.0000	1.0000	0	10	10	10	1.0000	0.0500	0	10
0.625	1.0000	1.0000	0	10	10	10	1.0000	0.0500	0	10
1.25	1.0000	1.0000	0	10	10	10	1.0000	0.0500	0	10
*2.5	0.1000	0.1000	9	1	10	10	0.0001	0.0500	9	10
5	0.0000	0.0000	10	0	10	10			10	10

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Fisher's Exact Test	1.25	2.5	1.76777	

Trimmed Spearman-Karber

Trim Level	EC50	95% CL	
0.0%	1.8946	1.6612	2.1609
5.0%	1.8530	1.6302	2.1062
10.0%	1.8372	1.6939	1.9925
20.0%	1.8372	1.6939	1.9925
Auto-0.0%	1.8946	1.6612	2.1609



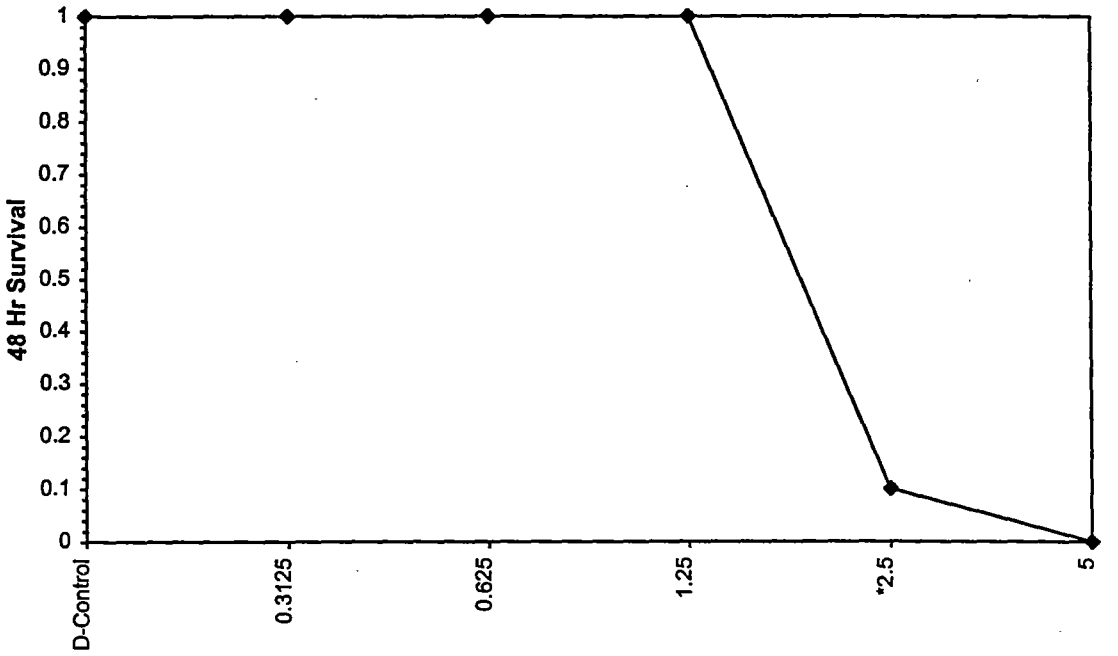
ToxCalc v5.0.23

Reviewed by: _____

Ceriodaphnia Survival and Reproduction Test-48 Hr Survival

Start Date:	8/31/99	Test ID:	REFTOX1029	Sample ID:	REF-Ref Toxicant
End Date:	9/7/99	Lab ID:	WAPTL-Parametrix Tox Lab	Sample Type:	NACL-Sodium chloride
Sample Date:		Protocol:	EPAF 94-EPA Freshwater	Test Species:	CD-Ceriodaphnia dubia
Comments:					

Dose-Response Plot



ToxCalc v5.0.23

Reviewed by: _____

SCOEPA00018899

Ceriodaphnia Survival and Reproduction Test-7 Day Survival

Start Date:	8/31/99	Test ID:	REFTOX1029	Sample ID:	REF-Ref Toxicant
End Date:	9/7/99	Lab ID:	WAPTL-Parametrix Tox Lab	Sample Type:	NACL-Sodium chloride
Sample Date:		Protocol:	EPAF 94-EPA Freshwater	Test Species:	CD-Ceriodaphnia dubia
Comments:					

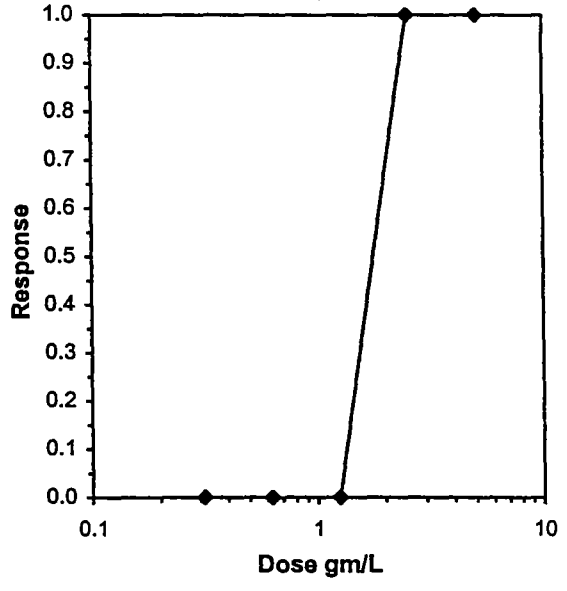
Conc-gm/L	1	2	3	4	5	6	7	8	9	10
D-Control	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.3125	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.625	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.25	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
2.5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Conc-gm/L	Mean	N-Mean	Resp	Not Resp	Total	N	Fisher's Exact P	1-Tailed Critical	Number Resp	Total Number
D-Control	1.0000	1.0000	0	10	10	10			0	10
0.3125	1.0000	1.0000	0	10	10	10	1.0000	0.0500	0	10
0.625	1.0000	1.0000	0	10	10	10	1.0000	0.0500	0	10
1.25	1.0000	1.0000	0	10	10	10	1.0000	0.0500	0	10
2.5	0.0000	0.0000	10	0	10	10			10	10
5	0.0000	0.0000	10	0	10	10			10	10

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Fisher's Exact Test	1.25	2.5	1.76777	

Graphical Method

Trim Level	EC50
0.0%	1.7678
	1.7678



ToxCalc v5.0.23

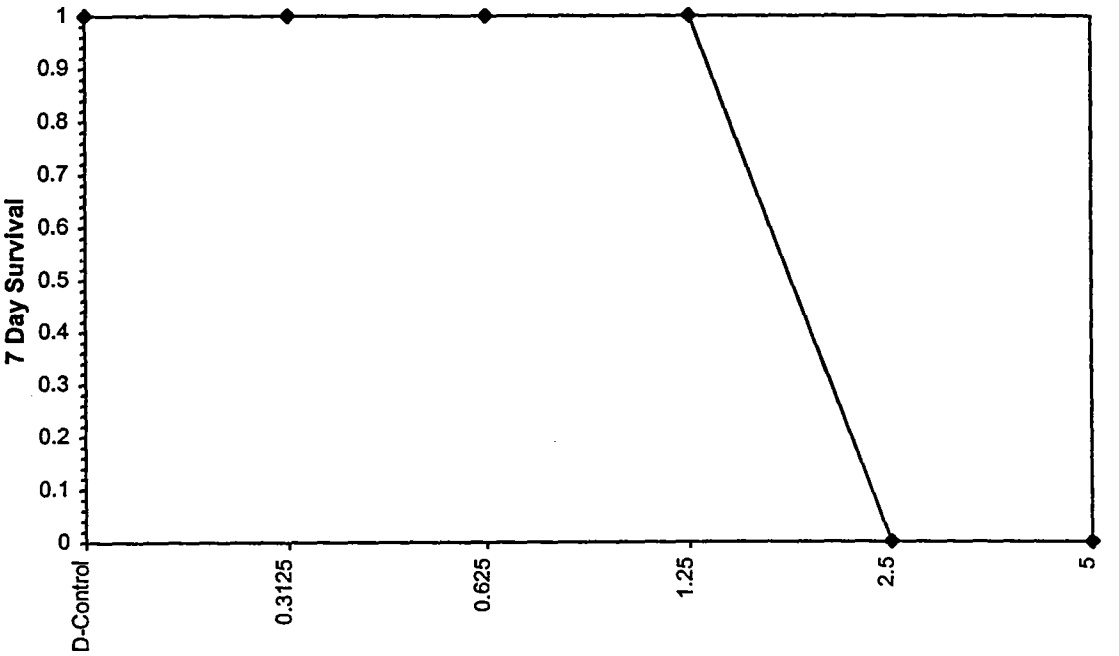
Reviewed by: _____

SCOEPA00018900

Ceriodaphnia Survival and Reproduction Test-7 Day Survival

Start Date:	8/31/99	Test ID:	REFTOX1029	Sample ID:	REF-Ref Toxicant
End Date:	9/7/99	Lab ID:	WAPTL-Parametrix Tox Lab	Sample Type:	NACL-Sodium chloride
Sample Date:		Protocol:	EPAF 94-EPA Freshwater	Test Species:	CD-Ceriodaphnia dubia
Comments:					

Dose-Response Plot



ToxCalc v5.0.23

Reviewed by: JL

SCOEPA00018901

Ceriodaphnia Survival and Reproduction Test-Reproduction

Start Date:	8/31/99	Test ID:	REFTOX1029	Sample ID:	REF-Ref Toxicant
End Date:	9/7/99	Lab ID:	WAPTL-Parametrix Tox Lab	Sample Type:	NACL-Sodium chloride
Sample Date:		Protocol:	EPAF 94-EPA Freshwater	Test Species:	CD-Ceriodaphnia dubia
Comments:					

Conc-gm/L	1	2	3	4	5	6	7	8	9	10
D-Control	17.000	17.000	21.000	17.000	17.000	19.000	22.000	20.000	21.000	17.000
0.3125	5.000	16.000	14.000	17.000	20.000	19.000	21.000	19.000	17.000	19.000
0.625	18.000	22.000	17.000	19.000	18.000	18.000	19.000	16.000	20.000	20.000
1.25	16.000	10.000	11.000	16.000	16.000	17.000	16.000	15.000	13.000	18.000
2.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

			Transform: Untransformed					Rank	1-Tailed	Isotonic	
Conc-gm/L	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical	Mean	N-Mean
D-Control	18.800	1.0000	18.800	17.000	22.000	10.872	10			18.800	1.0000
0.3125	16.700	0.8883	16.700	5.000	21.000	27.520	10	91.00	77.00	17.700	0.9415
0.625	18.700	0.9947	18.700	16.000	22.000	9.107	10	106.00	77.00	17.700	0.9415
*1.25	14.800	0.7872	14.800	10.000	18.000	17.677	10	62.50	77.00	14.800	0.7872
2.5	0.000	0.0000	0.000	0.000	0.000	0.000	10			0.000	0.0000
5	0.000	0.0000	0.000	0.000	0.000	0.000	10			0.000	0.0000

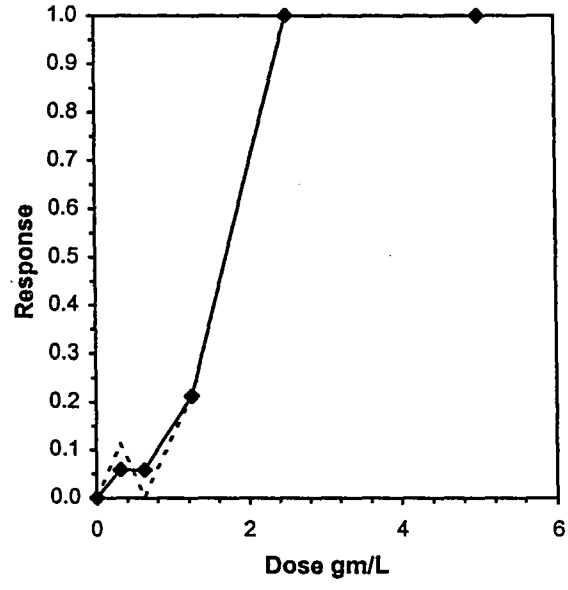
Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.87214	0.919	-1.8181	6.18226
Bartlett's Test indicates equal variances (p = 0.02)	10.4343	11.3449		

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Steel's Many-One Rank Test	0.625	1.25	0.88388	

Linear Interpolation (200 Resamples)

Point	gm/L	SD	95% CL		Skew
IC05*	0.2670	0.2723	0.0982	0.8212	0.2762
IC10	0.7931	0.2484	0.1965	1.0392	-1.0237
IC15	0.9957	0.1911	0.2947	1.2715	-1.4711
IC20	1.1983	0.1353	0.9446	1.3438	-1.9470
IC25	1.3091	0.0892	1.1049	1.4160	-2.1407
IC40	1.5473	0.0552	1.4290	1.6328	-0.5515
IC50	1.7061	0.0460	1.6075	1.7774	-0.5515

* indicates IC estimate less than the lowest concentration



ToxCalc v5.0.23

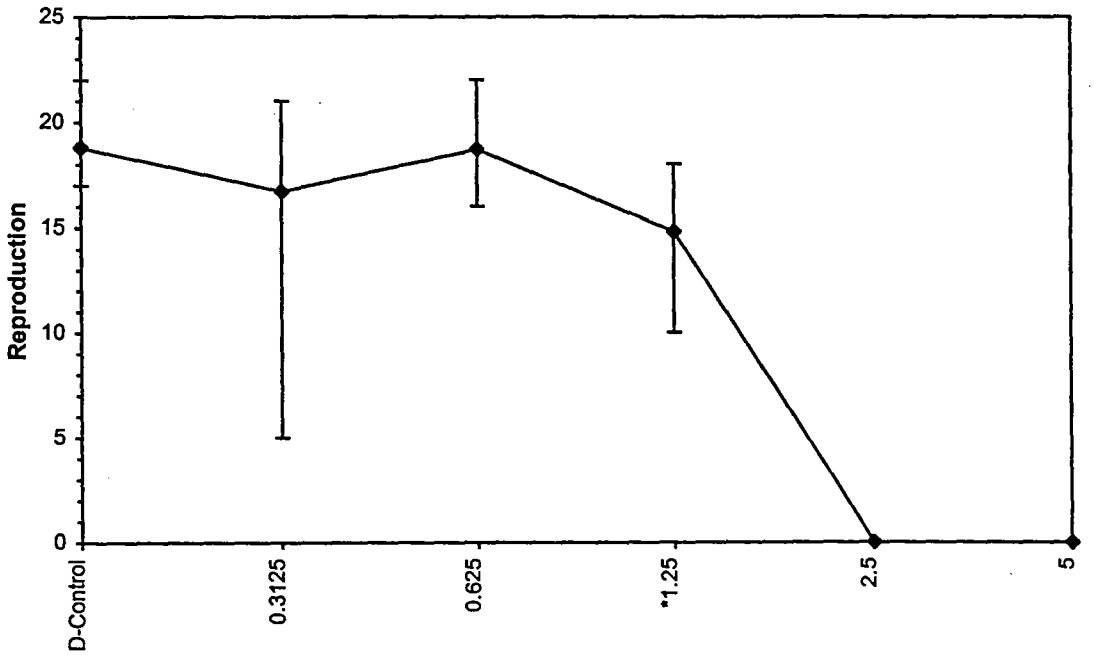
Reviewed by:

SCOEPA00018902

Ceriodaphnia Survival and Reproduction Test-Reproduction

Start Date:	8/31/99	Test ID:	REFTOX1029	Sample ID:	REF-Ref Toxicant
End Date:	9/7/99	Lab ID:	WAPTL-Parametrix Tox Lab	Sample Type:	NACL-Sodium chloride
Sample Date:		Protocol:	EPAF 94-EPA Freshwater	Test Species:	CD-Ceriodaphnia dubia
Comments:					

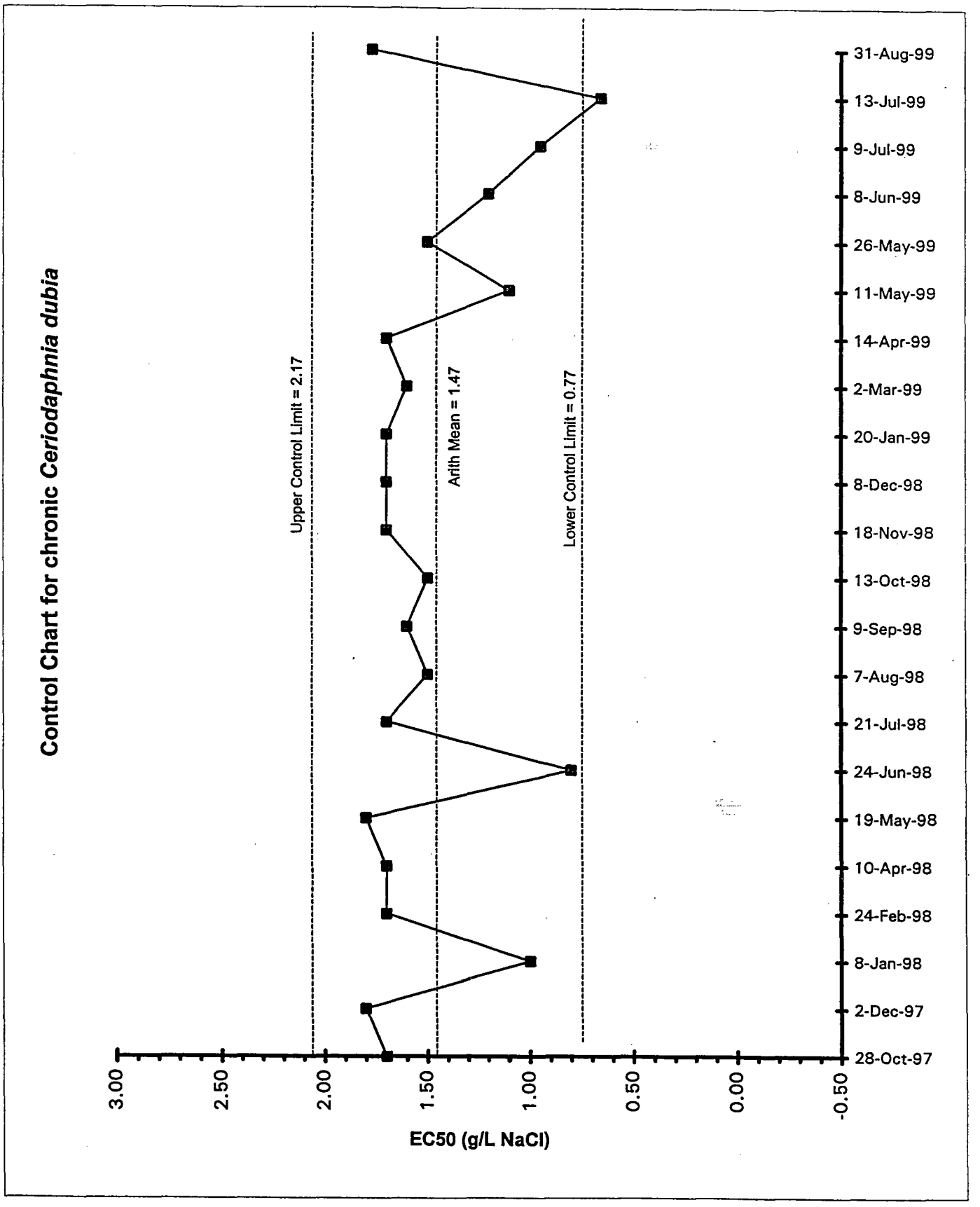
Dose-Response Plot



ToxCalc v5.0.23

Reviewed by: JC

SCOEPA00018903


Control Chart for chronic *Ceriodaphnia dubia*
Upper Control Limit = 2.17
Arith Mean = 1.47
Lower Control Limit = 0.77
EC50 (g/L NaCl)
3.00
2.50
2.00
1.50
1.00
0.50
0.00
-0.50
28-Oct-97
2-Dec-97
8-Jan-98
24-Feb-98
10-Apr-98
19-May-98
24-Jun-98
21-Jul-98
7-Aug-98
9-Sep-98
13-Oct-98
18-Nov-98
8-Dec-98
20-Jan-99
2-Mar-99
14-Apr-99
11-May-99
26-May-99
8-Jun-99
9-Jul-99
13-Jul-99
31-Aug-99

Parametrix, Inc.
Environmental Toxicology Laboratory

Pimephales promelas
CHRONIC DAILY MONITORING

Client: In house Ref Tox Collection Dates: NA

Sample: ~~A~~ KCl Test Dates: 8/31 - 9/7/99

	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Temp (°C)	25	25	24	25	25	25	25	25

g/L Conc.	pH													
	Initial	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Final
Control	8.4	8.2	8.1	8.0	7.8	8.1	7.6	7.7	7.7	8.1	7.9	7.9	7.7	7.8
.125	8.4	8.2	8.1	8.0	7.9	8.0	7.8	7.7	7.7	8.0	7.8	8.0	7.8	7.8
.25	8.4	8.2	8.1	7.9	7.8	8.0	7.8	7.8	7.7	8.0	7.7	7.9	7.7	7.8
.5	8.5	8.2	8.1	7.9	7.9	8.0	7.8	7.8	7.7	8.0	7.8	8.0	7.7	7.9
1	8.5	8.2	8.2	8.0	8.0	8.0	7.7	7.8	7.7	8.0	7.6	8.0	7.7	7.8
2	8.5	8.2	8.2	—	8.0	—	—	—	—	—	—	—	—	—

	Dissolved Oxygen (mg/L)													
	Initial	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Final
Control	8.3	8.3	7.9	8.1	6.6	7.9	6.7	7.7	6.7.0	8.2	7.6	(1) ~~8.0~~	7.8	7.4
.125	8.3	8.3	7.9	8.0	6.6	7.8	6.7	7.7	6.9	8.0	7.1	8.3	7.7	7.5
.25	8.3	8.3	7.8	8.1	6.3	7.8	7.0	7.5	6.9	7.8	6.8	7.9	7.3	7.6
.5	8.3	8.3	7.8	8.1	6.7	7.8	6.8	7.6	6.9	8.0	7.3	8.0	7.1	7.9
1	8.3	8.3	8.0	8.1	6.9	7.8	6.7	7.6	6.8	8.0	7.4	7.9	7.2	7.0
2	8.3	8.3	8.0	—	6.8	—	—	—	—	—	—	—	—	—

	Specific Conductivity (µS)							
	Initial	1	2	3	4	5	6	Final
Control	374	401	334	296	297	304	317	319
100%	3930	3960	—	—	—	—	—	

Sample #	NA	NA		na		na		na		NA		NA		
Initials	HR	AC	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	AC
Date	8/31	9/1	9/01	9/2	9/2	9/3	9/3	9/4	9/4	9/5	9/5	9/6	9/6	9/7

NT = Not Taken
Shading indicates areas where data collection is not required.

Comments: (1) DC, should read 8.2, [illegible] 9/6/99

[illegible] 9/14/99 a.c.

Parametrix, Inc.
Environmental Toxicology Laboratory

Parametrix, Inc.
5808 Lake Washington Blvd. N.E.
Kirkland, WA 98033

Pimephales promelas
Chronic Daily Survival

Client: In house Ref Tox
Test Initiation Time: 1530
Sample I.D./Source: KCl
Organism Source/Age: ABS less than 24 hrs old
Dilution Media: 90H
Test Dates: 8/31/99 - 9/7/99

g/L Conc.	Rep.	No. of Survivors 0	24	48	72	96	120	144	168
Control	18 A	10	10	10	10	10	10	10	10
	6 B	10	10	10	10	10	9-1	9	9
	3 C	10	10	10	10	10	10	10	10
	12 D	10	10	10	10	10	10	10	10
.125	2 A	10	9-1	9	9	9	9	8-1	8
	22 B	10	10	10	10	10	10	10	10
	7 C	10	10	9-1	9	9	9	9	9
	9 D	10	10	10	10	10	10	10	10
.25	21 A	10	10	10	10	10	10	10	10
	16 B	10	10	10	10	10	10	10	10
	23 C	10	10	10	10	10	10	10	10
	24 D	10	10	9-1	9	9	9	8-1	8
.5	1 A	10	9-1	9	9	9	9	7-2	7
	4 B	10	10	10	10	10	9-1	9	9
	13 C	10	10	10	10	9-1	9	9	9
	11 D	10	10	10	10	10	10	10	10
1	17 A	10	3-7	1-2	1	1	0-1	0	0
	14 B	10	4-6	3-1	3	3	1-2	0-1	0
	15 C	10	4-6	2-2	0-2	0	—	-	0
~~2~~	8 D	10	5-5	4-1	4	4	3-1	2-1	2
2	5 A	10	0-10	0	0	0	—	-	—
	10 B	10	1-9	0-1	0	0	—	-	—
	19 C	10	0-10	0	0	0	—	-	—
	20 D	10	0-10	0	0	0	—	-	—
	A								
	B								
	C								
	D								
	A								
	B								
	C								
	D								
Initials		RS	RS	gm	gm	gm	gm	gm	AC
Date		8/31	9/01	9/2 ①	9/3	9/4	9/5	9/6	9/7

Comments: DC: ① Should read 9/2, gm

9/14/99

Parametrix, Inc.
Environmental Toxicology Laboratory

7-DAY CHRONIC *Pimephales promelas* BIOMASS DATA

Client: In House Ref Tox Client No.: N/A

Conc./Rep.	Pan No.	Foil weight (mg)	Foil & Organism weight (mg)	Organism weight (mg)
CON A	1	12.41	17.57	
B	2	9.64	~~14.~~ 15.16	
C	3	9.88	13.92	
D	4	11.49	16.54	
0.125 A	5	9.38	13.71	
B	6	~~A~~ 12.50	17.27	
C	7	12.14	17.47	
D	8	8.34	13.54	
0.25 A	9	11.01	16.33	
B	10	9.38	14.18	
C	11	11.08	16.98	
D	12	12.47	16.88	
0.5 A	13	10.11	13.36	
B	14	9.27	14.13	
C	15	10.77	16.11	
D	16	10.83	16.50	
1 A	17	—		
B	18	—		
C	19	—		
D	20	9.38	11.00	
2 A	21	—		
B	22	—		
C	23	—		
D	24	—		

Comments:

9/14/99

Rev. 1/30/97

Client Name:	In House	Ref Tox		
Date: 8/31/99				
random #	test chambers			
7	18			
19	6			
1	3			
14	12			
10	2			
1	22			
12	7			
0	9			
0	21			
7	16			
12	23			
21	24			
8	1			
13	4			
19	13			
13	11			
20	17			
21	14			
13	15			
17	8			
15	5			
22	10			
9	19			
23	20			

Test: LF-Larval Fish Growth and Survival Test
Species: PP-Pimephales promelas
Sample ID: REF-Ref Toxicant
Start Date: 8/31/99 15:30 End Date: 9/7/99

Test ID: REFTOX1033
Protocol: EPAF 94-EPA Freshwater
Sample Type: KCL-Potassium chloride
Lab ID: WAPTL-Parametrix Tox Lab

Pos	ID	Rep	Group	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Total Wgt(mg)	Tare Wgt(mg)	Wgt Count	Notes
	1	1	D-Control	10	10	10	10	10	10	10	10	17.57	12.41		
	2	2	D-Control	10	10	10	10	10	9	9	9	15.16	9.64		
	3	3	D-Control	10	10	10	10	10	10	10	10	13.92	9.88		
	4	4	D-Control	10	10	10	10	10	10	10	10	16.54	11.49		
	5	1	0.125	10	9	9	9	9	9	8	8	13.71	9.38		
	6	2	0.125	10	10	10	10	10	10	10	10	17.27	12.5		
	7	3	0.125	10	10	9	9	9	9	9	9	17.47	12.14		
	8	4	0.125	10	10	10	10	10	10	10	10	13.54	8.34		
	9	1	0.250	10	10	10	10	10	10	10	10	16.33	11.01		
	10	2	0.250	10	10	10	10	10	10	10	10	14.18	9.38		
	11	3	0.250	10	10	10	10	10	10	10	10	16.98	11.08		
	12	4	0.250	10	10	9	9	9	9	8	8	16.88	12.47		
	13	1	0.500	10	9	9	9	9	9	7	7	13.36	10.11		
	14	2	0.500	10	10	10	10	10	9	9	9	14.13	9.27		
	15	3	0.500	10	10	10	10	9	9	9	9	16.11	10.77		
	16	4	0.500	10	10	10	10	10	10	10	10	16.5	10.83		
	17	1	1.000	10	3	1	1	1	0	0	0	NA	NA		
	18	2	1.000	10	4	3	3	3	1	0	0	NA	NA		
	19	3	1.000	10	4	2	0	0	0	0	0	NA	NA		
	20	4	1.000	10	5	4	4	4	3	2	2	11	9.38		
	21	1	2.000	10	0	0	0	0	0	0	0	NA	NA		
	22	2	2.000	10	1	0	0	0	0	0	0	NA	NA		
	23	3	2.000	10	0	0	0	0	0	0	0	NA	NA		
	24	4	2.000	10	0	0	0	0	0	0	0	NA	NA		

Comments:

ToxCalc 5.0

Reviewed by:

Larval Fish Growth and Survival Test-48 Hr Survival

Start Date:	8/31/99 15:30	Test ID:	REFTOX1033	Sample ID:	REF-Ref Toxicant
End Date:	9/7/99	Lab ID:	WAPTL-Parametrix Tox Lab	Sample Type:	KCL-Potassium chloride
Sample Date:		Protocol:	EPAF 94-EPA Freshwater	Test Species:	PP-Pimephales promelas
Comments:					

Conc-gm/L	1	2	3	4
D-Control	1.0000	1.0000	1.0000	1.0000
0.125	0.9000	1.0000	0.9000	1.0000
0.25	1.0000	1.0000	1.0000	0.9000
0.5	0.9000	1.0000	1.0000	1.0000
1	0.1000	0.3000	0.2000	0.4000
2	0.0000	0.0000	0.0000	0.0000

			Transform: Arcsin Square Root					Rank	1-Tailed	Number	Total
Conc-gm/L	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical	Resp	Number
D-Control	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	4			0	40
0.125	0.9500	0.9500	1.3305	1.2490	1.4120	7.072	4	14.00	10.00	2	40
0.25	0.9750	0.9750	1.3713	1.2490	1.4120	5.942	4	16.00	10.00	1	40
0.5	0.9750	0.9750	1.3713	1.2490	1.4120	5.942	4	16.00	10.00	1	40
*1	0.2500	0.2500	0.5124	0.3218	0.6847	30.428	4	10.00	10.00	30	40
2	0.0000	0.0000	0.1588	0.1588	0.1588	0.000	4			40	40

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.94235	0.868	-0.4544	0.31375
Equality of variance cannot be confirmed				

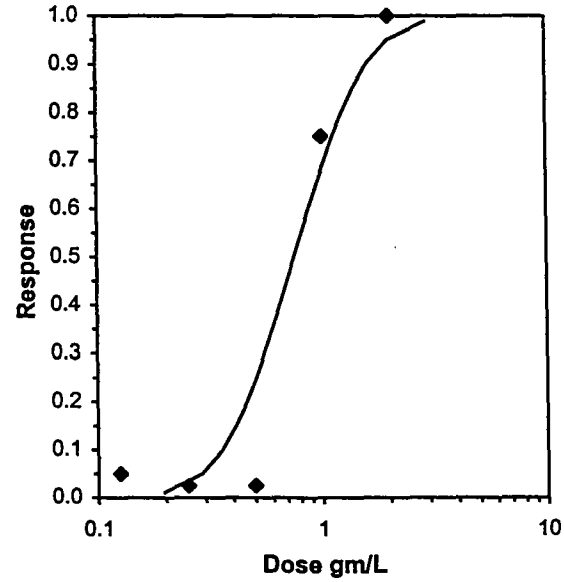
Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Steel's Many-One Rank Test	0.5	1	0.70711	

Maximum Likelihood-Probit

Parameter	Value	SE	95% Fiducial Limits		Control	Chi-Sq	Critical	P-value	Mu	Sigma	Iter
Slope	3.93501	2.82989	-5.071	12.941	0	103.811	7.81472	2.4E-22	-0.1219	0.25413	5
Intercept	5.47957	0.84634	2.78613	8.173							
TSCR											

Point	Probits	gm/L	95% Fiducial Limits
EC01	2.674	0.19361	
EC05	3.355	0.28849	
EC10	3.718	0.35682	
EC15	3.964	0.41185	
EC20	4.158	0.46158	
EC25	4.326	0.509	
EC40	4.747	0.65125	
EC50	5.000	0.75532	
EC60	5.253	0.87601	
EC75	5.674	1.12082	
EC80	5.842	1.23597	
EC85	6.036	1.38521	
EC90	6.282	1.59885	
EC95	6.645	1.97757	
EC99	7.326	2.94659	

Significant heterogeneity detected (p = 2.35E-22)



ToxCalc v5.0.23

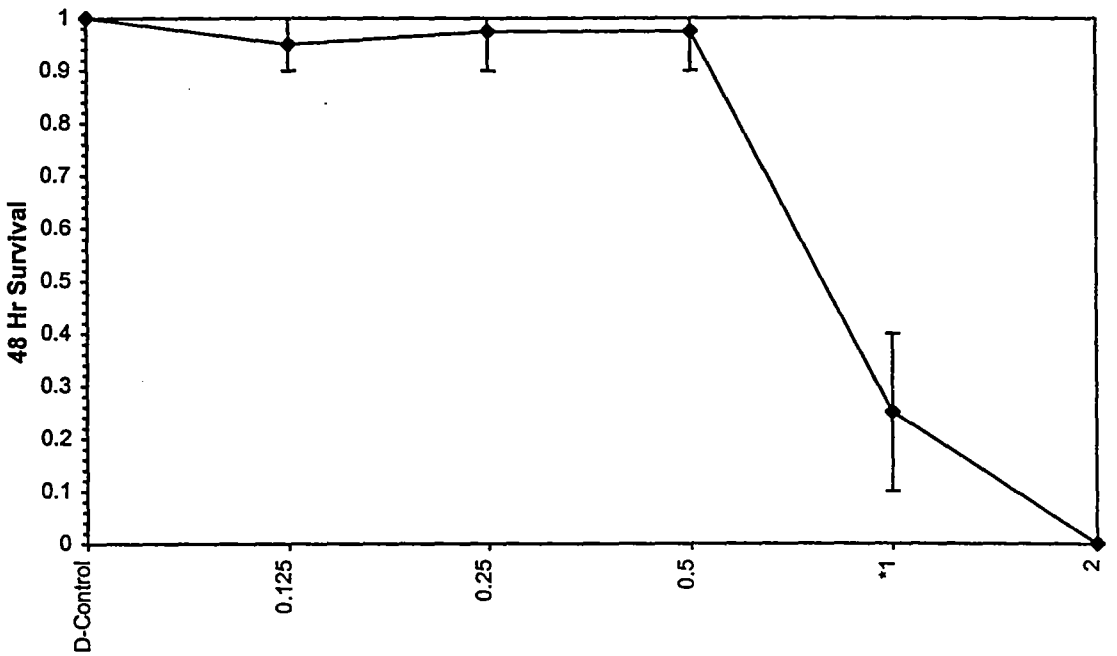
Reviewed by: _____

SCOEPA00018910

Larval Fish Growth and Survival Test-48 Hr Survival

Start Date:	8/31/99 15:30	Test ID:	REFTOX1033	Sample ID:	REF-Ref Toxicant
End Date:	9/7/99	Lab ID:	WAPTL-Parametrix Tox Lab	Sample Type:	KCL-Potassium chloride
Sample Date:		Protocol:	EPAF 94-EPA Freshwater	Test Species:	PP-Pimephales promelas
Comments:					

Dose-Response Plot



ToxCalc v5.0.23

Reviewed by: AC

SCOEPA00018911

Larval Fish Growth and Survival Test-96 Hr Survival

Start Date:	8/31/99 15:30	Test ID:	REFTOX1033	Sample ID:	REF-Ref Toxicant
End Date:	9/7/99	Lab ID:	WAPTL-Parametrix Tox Lab	Sample Type:	KCL-Potassium chloride
Sample Date:		Protocol:	EPAF 94-EPA Freshwater	Test Species:	PP-Pimephales promelas
Comments:					

Conc-gm/L	1	2	3	4
D-Control	1.0000	1.0000	1.0000	1.0000
0.125	0.9000	1.0000	0.9000	1.0000
0.25	1.0000	1.0000	1.0000	0.9000
0.5	0.9000	1.0000	0.9000	1.0000
1	0.1000	0.3000	0.0000	0.4000
2	0.0000	0.0000	0.0000	0.0000

			Transform: Arcsin Square Root					Rank	1-Tailed	Number	Total
Conc-gm/L	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical	Resp	Number
D-Control	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	4			0	40
0.125	0.9500	0.9500	1.3305	1.2490	1.4120	7.072	4	14.00	10.00	2	40
0.25	0.9750	0.9750	1.3713	1.2490	1.4120	5.942	4	16.00	10.00	1	40
0.5	0.9500	0.9500	1.3305	1.2490	1.4120	7.072	4	14.00	10.00	2	40
*1	0.2000	0.2000	0.4362	0.1588	0.6847	54.954	4	10.00	10.00	32	40
2	0.0000	0.0000	0.1588	0.1588	0.1588	0.000	4			40	40

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.95735	0.868	-0.2463	1.18701
Equality of variance cannot be confirmed				

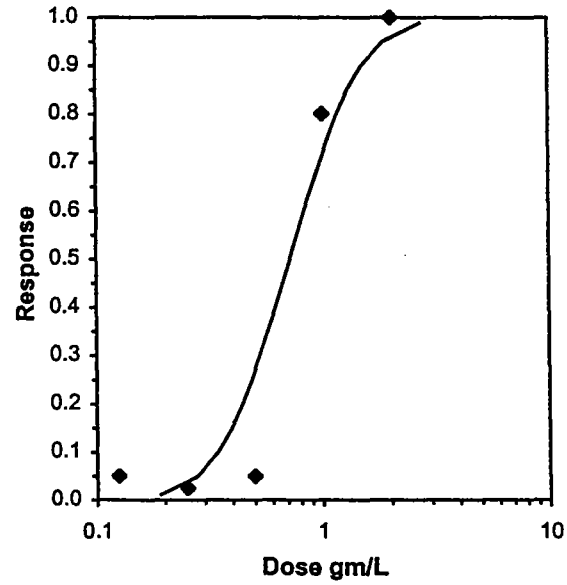
Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Steel's Many-One Rank Test	0.5	1	0.70711	

Maximum Likelihood-Probit

Parameter	Value	SE	95% Fiducial Limits		Control	Chi-Sq	Critical	P-value	Mu	Sigma	Iter
Slope	4.00294	2.69665	-4.579	12.5849	0	92.0251	7.81472	8.1E-20	-0.1446	0.24982	4
Intercept	5.57875	0.82713	2.94644	8.21105							
TSCR											

Point	Probits	gm/L	95% Fiducial Limits
EC01	2.674	0.18804	
EC05	3.355	0.2783	
EC10	3.718	0.34298	
EC15	3.964	0.39491	
EC20	4.158	0.44174	
EC25	4.326	0.48632	
EC40	4.747	0.61963	
EC50	5.000	0.71684	
EC60	5.253	0.8293	
EC75	5.674	1.05662	
EC80	5.842	1.16324	
EC85	6.036	1.30118	
EC90	6.282	1.49821	
EC95	6.645	1.84642	
EC99	7.326	2.73262	

Significant heterogeneity detected (p = 8.05E-20)



ToxCalc v5.0.23

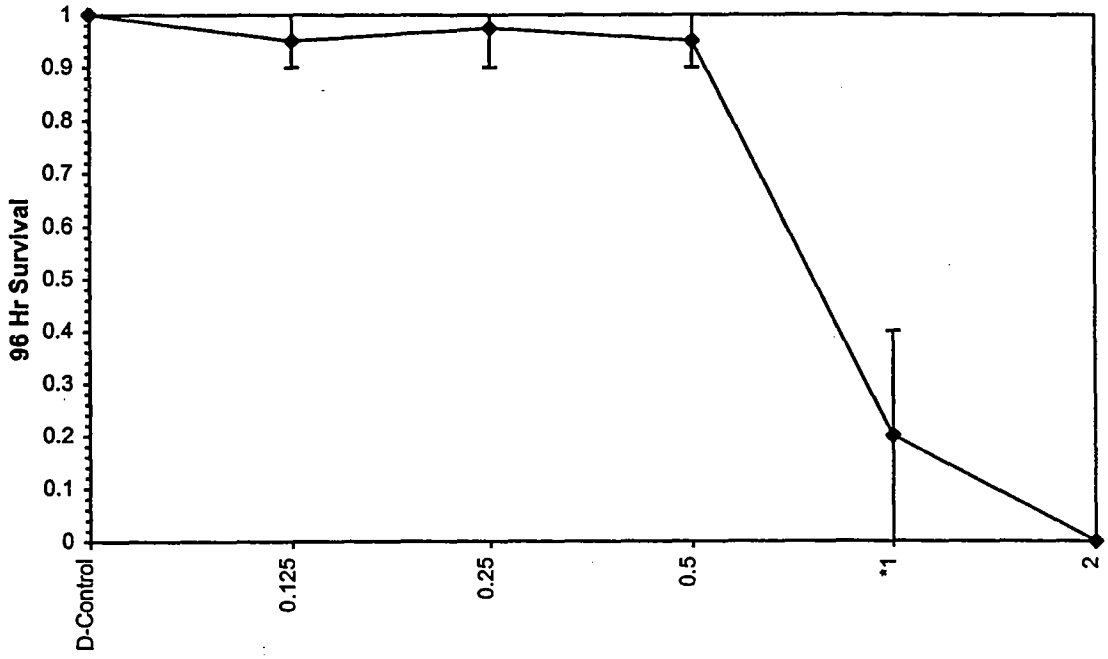
Reviewed by: JL

SCOEPA00018912

Larval Fish Growth and Survival Test-96 Hr Survival

Start Date:	8/31/99 15:30	Test ID:	REFTOX1033	Sample ID:	REF-Ref Toxicant
End Date:	9/7/99	Lab ID:	WAPTL-Parametrix Tox Lab	Sample Type:	KCL-Potassium chloride
Sample Date:		Protocol:	EPAF 94-EPA Freshwater	Test Species:	PP-Pimephales promelas
Comments:					

Dose-Response Plot



ToxCalc v5.0.23

Reviewed by:

Larval Fish Growth and Survival Test-7 Day Survival

Start Date:	8/31/99 15:30	Test ID:	REFTOX1033	Sample ID:	REF-Ref Toxicant
End Date:	9/7/99	Lab ID:	WAPTL-Parametrix Tox Lab	Sample Type:	KCL-Potassium chloride
Sample Date:		Protocol:	EPAF 94-EPA Freshwater	Test Species:	PP-Pimephales promelas
Comments:					

Conc-gm/L	1	2	3	4
D-Control	1.0000	0.9000	1.0000	1.0000
0.125	0.8000	1.0000	0.9000	1.0000
0.25	1.0000	1.0000	1.0000	0.8000
0.5	0.7000	0.9000	0.9000	1.0000
1	0.0000	0.0000	0.0000	0.2000
2	0.0000	0.0000	0.0000	0.0000

			Transform: Arcsin Square Root						1-Tailed		Number	Total
Conc-gm/L	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD	Resp	Number
D-Control	0.9750	1.0000	1.3713	1.2490	1.4120	5.942	4				1	40
0.125	0.9250	0.9487	1.2951	1.1071	1.4120	11.347	4	0.744	2.360	0.2418	3	40
0.25	0.9500	0.9744	1.3358	1.1071	1.4120	11.411	4	0.346	2.360	0.2418	2	40
0.5	0.8750	0.8974	1.2253	0.9912	1.4120	14.199	4	1.425	2.360	0.2418	5	40
*1	0.0500	0.0513	0.2350	0.1588	0.4636	64.866	4	11.090	2.360	0.2418	38	40
2	0.0000	0.0000	0.1588	0.1588	0.1588	0.000	4				40	40

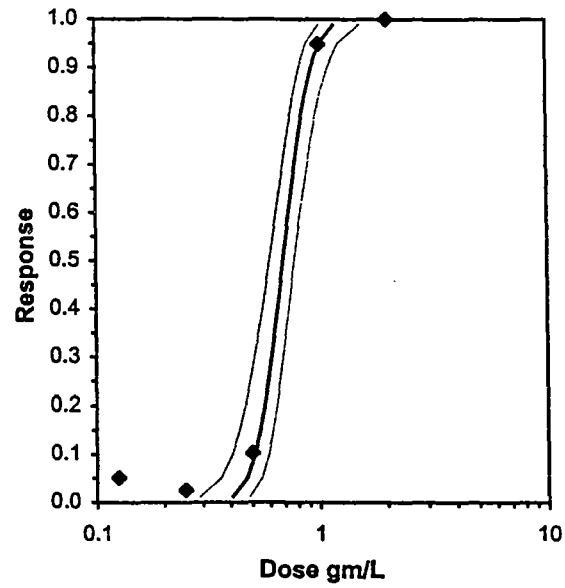
Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.95749	0.868	-0.314	-0.4503
Bartlett's Test indicates equal variances (p = 0.83)	1.46757	13.2767		

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU	MSDu	MSDp	MSB	MSE	F-Prob	df
Dunnett's Test	0.5	1	0.70711		0.14316	0.14902	0.93089	0.021	3.9E-08	4, 15

Maximum Likelihood-Probit

Parameter	Value	SE	95% Fiducial Limits		Control	Chi-Sq	Critical	P-value	Mu	Sigma	Iter
Slope	10.0726	1.72065	6.70012	13.4451	0.025	0.52642	7.81472	0.91	-0.1608	0.09928	6
Intercept	6.61993	0.34791	5.93802	7.30183							
TSCR	0.05	0.0199	0.011	0.089							

Point	Probits	gm/L	95% Fiducial Limits	
EC01	2.674	0.40571	0.28927	0.48766
EC05	3.355	0.47411	0.36243	0.55283
EC10	3.718	0.51516	0.40787	0.5923
EC15	3.964	0.54485	0.44115	0.62128
EC20	4.158	0.56966	0.46909	0.64594
EC25	4.326	0.59185	0.49405	0.66842
EC40	4.747	0.65166	0.56055	0.73179
EC50	5.000	0.69052	0.60245	0.77577
EC60	5.253	0.73169	0.64519	0.82531
EC75	5.674	0.80563	0.71697	0.92254
EC80	5.842	0.83701	0.74552	0.96696
EC85	6.036	0.87513	0.77884	1.02325
EC90	6.282	0.92556	0.82096	1.10135
EC95	6.645	1.00571	0.88426	1.23285
EC99	7.326	1.17526	1.0084	1.53553



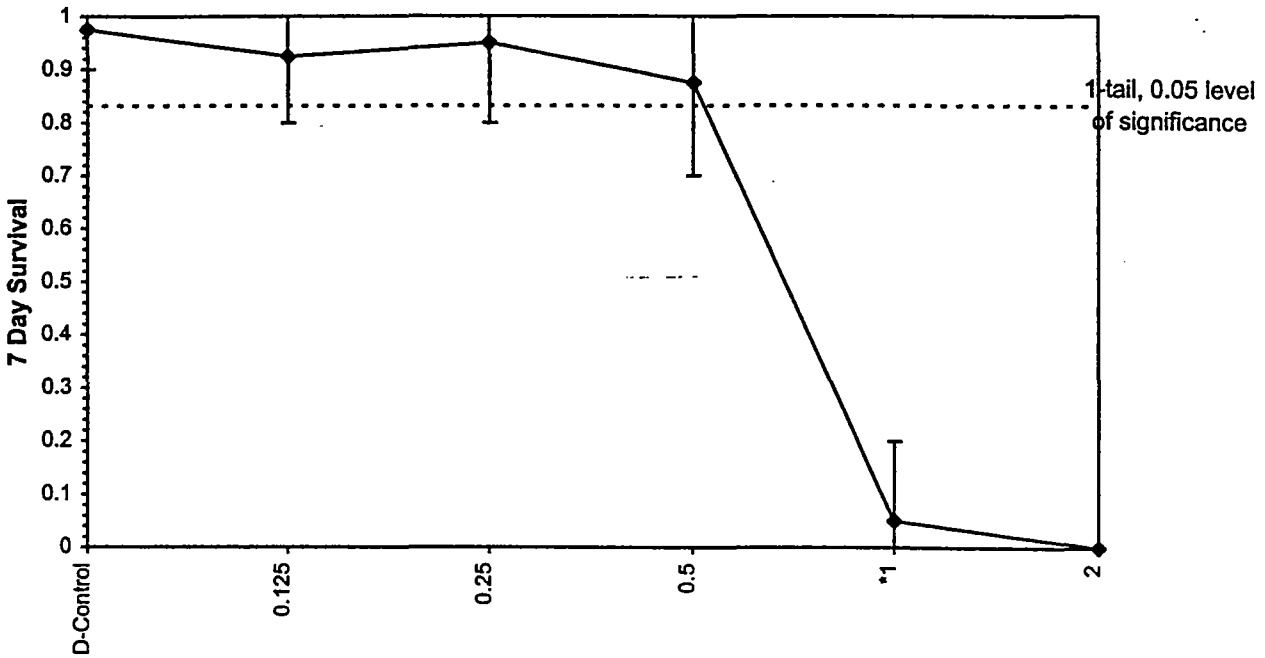
ToxCalc v5.0.23

Reviewed by: JC

SCOEPA00018914

Start Date:	8/31/99 15:30	Test ID:	REFTOX1033	Sample ID:	REF-Ref Toxicant
End Date:	9/7/99	Lab ID:	WAPTL-Parametrix Tox Lab	Sample Type:	KCL-Potassium chloride
Sample Date:		Protocol:	EPAF 94-EPA Freshwater	Test Species:	PP-Pimephales promelas
Comments:					

Dose-Response Plot



ToxCalc v5.0.23

Reviewed by: _____

Larval Fish Growth and Survival Test-7 Day Biomass

Start Date:	8/31/99 15:30	Test ID:	REFTOX1033	Sample ID:	REF-Ref Toxicant
End Date:	9/7/99	Lab ID:	WAPTL-Parametrix Tox Lab	Sample Type:	KCL-Potassium chloride
Sample Date:		Protocol:	EPAF 94-EPA Freshwater	Test Species:	PP-Pimephales promelas
Comments:					

Conc-gm/L	1	2	3	4
D-Control	0.5160	0.5520	0.4040	0.5050
0.125	0.4330	0.4770	0.5330	0.5200
0.25	0.5320	0.4800	0.5900	0.4410
0.5	0.3250	0.4860	0.5340	0.5670
1	0.1620			

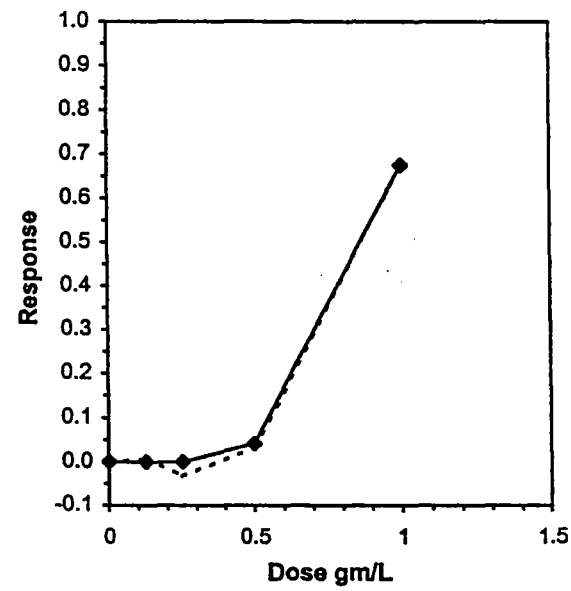
			Transform: Untransformed						1-Tailed		Isotonic	
Conc-gm/L	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD	Mean	N-Mean
D-Control	0.4943	1.0000	0.4943	0.4040	0.5520	12.833	4				0.4986	1.0000
0.125	0.4908	0.9929	0.4908	0.4330	0.5330	9.237	4	0.067	2.290	0.1195	0.4986	1.0000
0.25	0.5108	1.0334	0.5108	0.4410	0.5900	12.660	4	-0.316	2.290	0.1195	0.4986	1.0000
0.5	0.4780	0.9671	0.4780	0.3250	0.5670	22.444	4	0.312	2.290	0.1195	0.4780	0.9587
1	0.1620	0.3278	0.1620	0.1620	0.1620	0.000	1				0.1620	0.3249

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.94349	0.844	-0.8453	0.37825
Bartlett's Test indicates equal variances (p = 0.56)	2.08291	11.3449		

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU	MSDu	MSDp	MSB	MSE	F-Prob	df
Dunnett's Test	0.5	>0.5			0.11946	0.24169	0.00073	0.00544	0.93806	3, 12

Linear Interpolation (200 Resamples)

Point	gm/L	SD	95% CL(Exp)		Skew
IC05	0.5069	0.1570	0.0000	0.5710	-0.6349
IC10	0.5463	0.0901	0.0221	0.6062	-0.9901
IC15	0.5858	0.0710	0.1490	0.6415	-1.1888
IC20	0.6252	0.0608	0.2262	0.6767	-1.2301
IC25	0.6647	0.0551	0.2940	0.7121	-1.2878
IC40	0.7830	0.0375	0.5423	0.8209	-1.3363
IC50	0.8619	0.0255	0.7033	0.8922	-1.2678

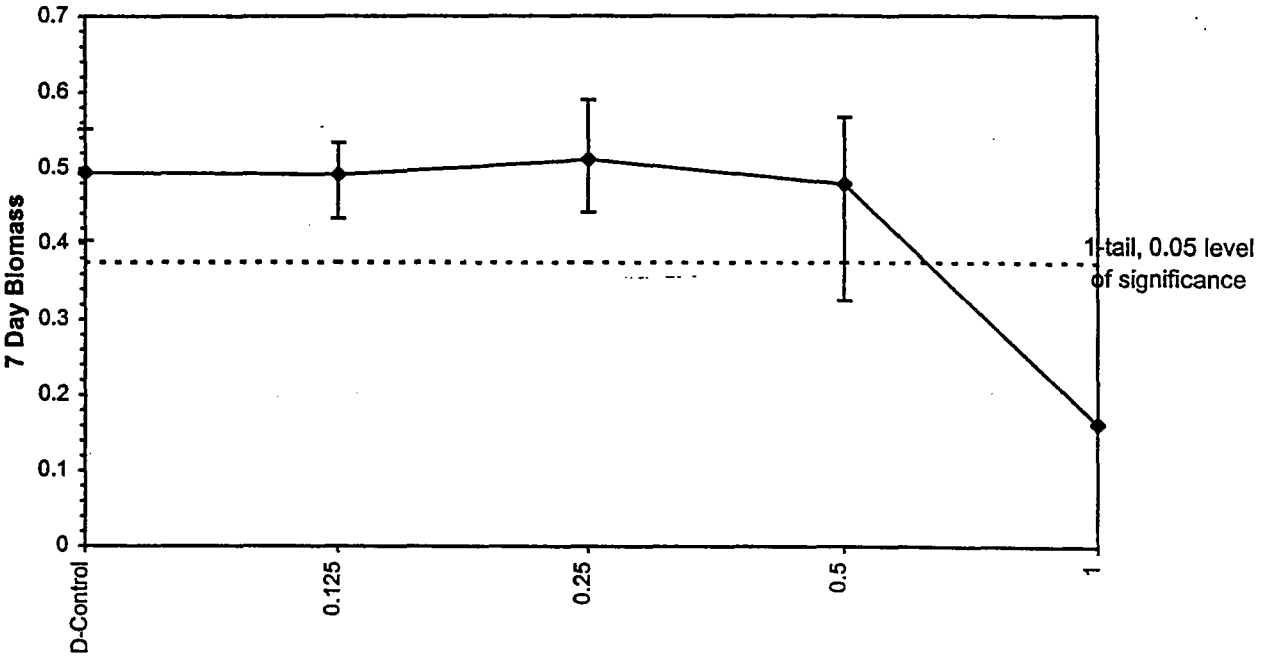


ToxCalc v5.0.23

Reviewed by: _____

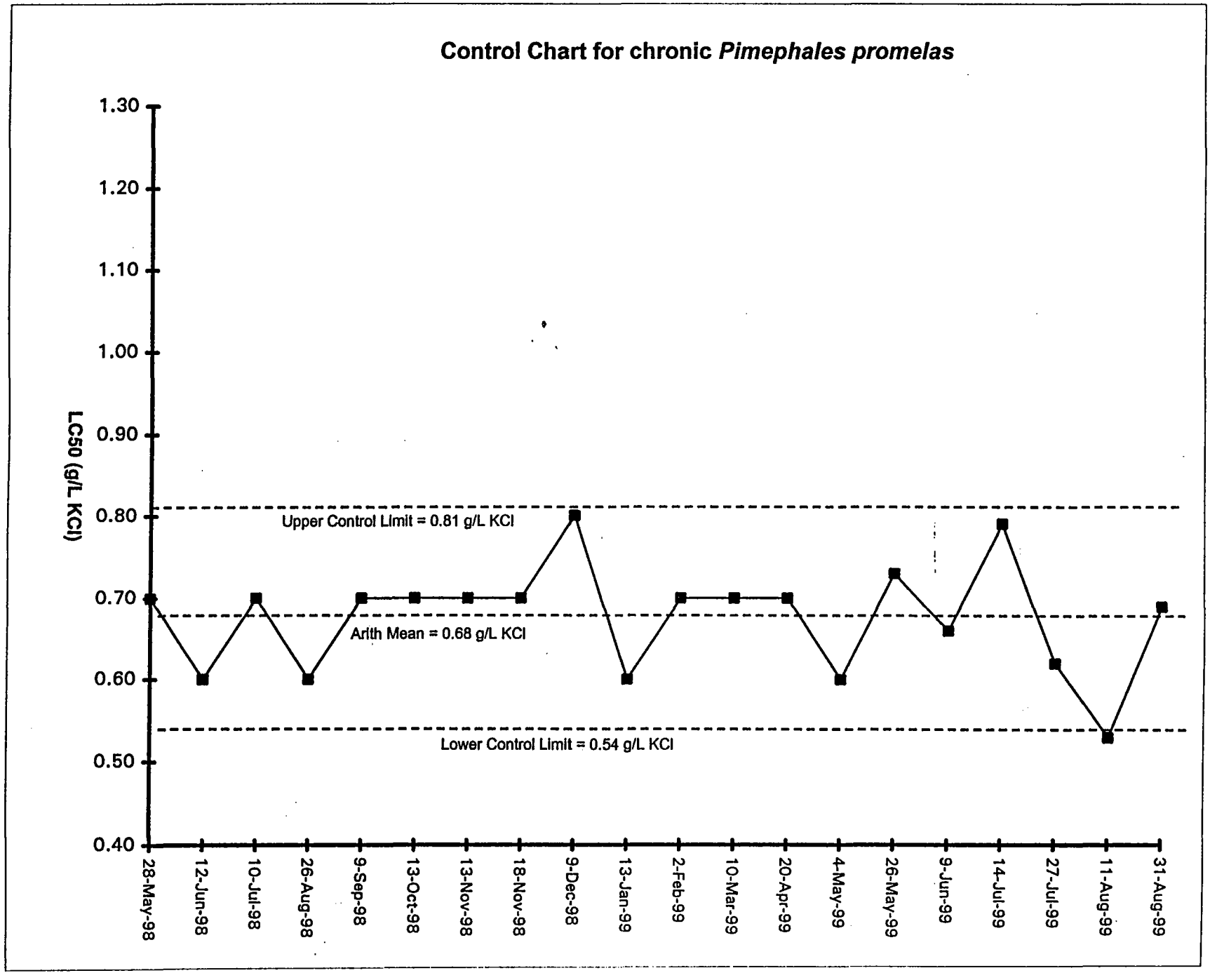
Start Date:	8/31/99 15:30	Test ID:	REFTOX1033	Sample ID:	REF-Ref Toxicant
End Date:	9/7/99	Lab ID:	WAPTL-Parametrix Tox Lab	Sample Type:	KCL-Potassium chloride
Sample Date:		Protocol:	EPAF 94-EPA Freshwater	Test Species:	PP-Pimephales promelas
Comments:					

Dose-Response Plot



ToxCalc v5.0.23

Reviewed by: JM



SCOEPA00018918

APPENDIX D

CHAIN-OF-CUSTODY FORMS AND INITIAL WATER QUALITY PARAMETERS

P909143

Sending Laboratory	Receiving Laboratory
'h Creek Analytical - Portland +05 SW Nimbus Ave. Beaverton, OR 97008 'hone: 503/906-9200 'ax: 503/906-9210 roject Manager: Sara McClurg	Parametrix, Inc. 5808 Lake Washington Blvd. NE Kirkland, WA 98033 Phone: 425-822-8880 Fax: 425-889-8808

Subcontract Order Comments

/8/99 16:50

Sample/Analysis Information

'ample Name	Matrix	Sampled/ Expires	Analysis Requested	Due	Lab Number	Container	Comments Collected @ 0810
909143-01	Water	9/8/99				A	
		9/9/99	Subcontract Outside	9/15/99			Bioassay

1 5 gallon cube of effluent

no tamper-evident seal.
Receiving Temp: 2 °C

Released By J. Roberts Date 9/8/99 Received By G. Mitchell Date 9/9/99

Released By _____ Date _____ Received By _____ Date _____

SCOEPA00018920

P909143

Sending Laboratory	Receiving Laboratory
ırth Creek Analytical - Portland 05 SW Nimbus Ave. averton, OR 97008	Parametrix, Inc. 5808 Lake Washington Blvd. NE Kirkland, WA 98033
one: 503/906-9200 x: 503/906-9210 ıject Manager: Sara McClurg	Phone: 425-822-8880 Fax: 425-889-8808

Subcontract Order Comments

:/99 16:50

Sample/Analysis Information

nple Name	Matrix	Sampled/ Expires	Analysis Requested	Due	Lab Number	Container	Comments
9143-01	Water	9/8/99				A	
		~~9/9/99~~	~~Subcontract Outside~~	~~9/20/99~~			~~Bioassay~~ Sent 9/8/99
9143-05	Water	9/9/99				A	
		9/10/99	Subcontract Outside	9/20/99			Bioassay

15 gall cube of effluent

No tamper evident seal intact

Receiving temp: 1°

Released By Bob Fa Date 9/10/99 Received By [illegible] Date 9/11/99

Released By _____ Date _____ Received By _____ Date _____

SCOEPA00018921

P909143

Sending Laboratory	Receiving Laboratory
rth Creek Analytical - Portland)5 SW Nimbus Ave. averton, OR 97008	Parametrix, Inc. 5808 Lake Washington Blvd. NE Kirkland, WA 98033
)ne: 503/906-9200 c: 503/906-9210 ject Manager: Sara McClurg	Phone: 425-822-8880 Fax: 425-889-8808

Subcontract Order Comments

'99 16:50

Sample/Analysis Information

ple Name	Matrix	Sampled/ Expires	Analysis Requested	Due	Lab Number	Container	Comments
~~9143-01~~	~~Water~~	9/8/99				A	
		~~9/9/99~~	~~Subcontract Outside~~	~~9/20/99~~			~~Bioassay~~
~~143-05~~	~~Water~~	9/10/99				A	
		~~9/11/99~~	~~Subcontract Outside~~	~~9/20/99~~			~~Bioassay~~
9143-06	Water	9/13/99				A	
		9/14/99	Subcontract Outside	9/20/99			Bioassay

Released By [signature] Date 9/13 Received By [signature] Date 9/14/99 Temp= ~~10~~ 6m 1°C

Released By _____ Date _____ Received By _____ Date _____

SCOEPA00018922

Parametrix Environmental Toxicology Laboratory
5808 Lake Washington Boulevard NE, Suite 200
Kirkland, WA 98033

INITIAL WATER QUALITY PARAMETERS

SOURCE: Wacker **CLIENT:** NCA - Portland **CLIENT NO:** 55-1945-12

SAMPLE #1		SAMPLE #2		SAMPLE #3	
Date Sample Collected:	9/8/99	Date Sample Collected:	9/10/99	Date Sample Collected:	9/13/99
Date Sample Received:	9/9/99	Date Sample Received:	9/11/99	Date Sample Received:	9/14/99
Temperature (°C):	2	Temperature (°C):	1°	Temperature (°C):	1°
Salinity (ppt):	0.2	Salinity (ppt):	0.1	Salinity (ppt):	0.2
Dissolved Oxygen (mg/L):	8.2	Dissolved Oxygen (mg/L):	7.6	Dissolved Oxygen (mg/L):	8.6
pH:	6.8	pH:	7.0	pH:	7.0
Conductivity (µS):	910	Conductivity (µS):	812	Conductivity (µS):	905
Hardness (mg/L $CaCO_3$):	136	Hardness (mg/L $CaCO_3$):	138	Hardness (mg/L $CaCO_3$):	200
Alkalinity (mg/L $CaCO_3$):	22	Alkalinity (mg/L $CaCO_3$):	92	Alkalinity (mg/L $CaCO_3$):	36
Residual Chlorine (mg/L):	<~~7~~ 0.01	Residual Chlorine (mg/L):	< 0.01	Residual Chlorine (mg/L):	0.02
Ammonia (mg/L):	<~~7~~ 1.0	Ammonia (mg/L):	< 1.0	Ammonia (mg/L):	1.0
Initials:	AC	Initials:	[illegible]	Initials:	JU

NT= Not Taken

Rev. 2/20/96

SCOEPA00018923

DOC ID: O:\Clom\Port.BRN\OFFSUPP.SEC\Forms\Fax.LOG
Revision #: 1.03
Revision Date: 09/06/94

FACSIMILE TRANSMITTAL LOG

TO: Company Name: Wacker Date:

Attention: Tom Rothschild

FAX #: (503) 417-4144 Confirmation #: ( )

# of Pages (Including Cover Sheets): 3

TELECOPIER PHONE #: (503) 254-1452 **CONFIRMATION PHONE #: (503) 254-1794**

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COMMENTS: Here is the Report for TIE. let me know today if we are Still picking up a Sample on ~~Monday~~ tuesday
503 254 1794
Brian

Coffey Laboratories, Inc.
12423 N.E. Whitaker Way • Portland, OR • 97230 • (503) 254-1794 • FAX (503) 254-1452

Mr. Thomas J. Rothschild
Wacker Siltronic
7200 NW Front Avenue
Portland, OR 97210

January 31, 2001
Job #: MXA10123AM

Re: Statistical Analysis - Toxicity Tests

Coffey laboratories received on January 23 2001, three samples to preform C18 filtering and acute *Ceriodaphnia dubia* testing. The three samples were marked 01-8 outfall, 01-9 MV-3, 01-10 fab2 by Wacker and were given id's of 1-3y consecutively by Coffey.

The samples were filtered through JT Baker C18 SPE columns prior to setting up Acute test. The amount filtered for each sample was 10, 15 and 30mls per column. The goal of this test is to observe if the original testing performed on December 15 2000 overloaded the column. Methanol test was performed to see if the toxicant could be eluded from the column. The results of these tests are below. The numbers are in percent survival.

Treatment	Hour 0	Hour 24	Hour 48
Control (dilution water)	100	100	100
No treatment OUTFALL	100	0	0
C18 Control	100	100	100
Methanol	100	100	50
1y 10mls/column	100	0	0
1y 15mls/column	100	0	0
1y 30mls/column	100	30	0
2y 10mls/column	100	100	100
2y 15mls/column	100	100	100
2y 30mls/column	100	100	100
3y 10mls/column	100	0	0
3y 15mls/column	100	0	0
3y 30mls/column	100	50	0

From the figures above it appears that the column from the initial test was not overloaded. It appears that with more sample filtered the more the toxicity is reduced. This could be due to the column chemistry being changed by characteristics of the sample. For example a difference in pH from the prep of the column with in house dilution water and the sample could cause a difference in how the column acts. It is also possible for the column to bind chemical number one. Chemical number one bond enables

chemical number two to bind to the column. When chemical one is not present chemical two can not bind. This would also explain that with more water filtered the less toxic it becomes. The methanol did seem to have become toxic this time. This could be from the methanol itself or from the toxicant coming off the column. The next test a sample of pure methanol at the same concentration will be ran as control to see if the level of methanol caused toxicity.

The next step is to test these two hypothesis. First is to change the pH of the sample to 4 and to 10 and pass through the column then change back to 7 for testing. Second is to take a sample and collect 30mls of water after say 30, 60, 90 and 120mls of sample have passed through the column. These tests will enable us to verify the cause of the results above. The next testing will also be using a new column bed from JT Baker called PolarPlus C18 which is used when C18 yields low recovery of very polar compounds. This should help in removal of the toxicant.

Additionally Coffey laboratories also tested the three samples for Glycols and anionic surfactant. Below are the results of each test.

Sample	Surfactants		Ethylene Glycol		Propylene Glycol	
	D.L.	Result (mg/L)	D.L.	Result (mg/L)	D.L.	Result (mg/L)
1y	0.01	0.08	1	ND	1	ND
2y	0.01	0.02	1	ND	1	ND
3y	0.01	0.03	1	ND	1	ND

The results of the surfactant test shows that there is surfactant present. This is anionic surfactant. A test for total surfactant might show a better result of the level in the sample, if any other type of surfactant is used in the process. The glycol results show not detected for all samples. This show that the toxicant is not ethylene glycol or propylene glycol. This is a difference from results of the previous test that showed from 5 to 14 mg/L of glycol.

Coffey is prepared to start a new filtering and set up on Wednesday February 6 2001. If you have any questions feel free to call me at 503-254-1794.

Sincerely,
COFFEY LABORATORIES, INC.

Brian Boling
Aquatic Biologist

Mr. Thomas J. Rothschild
Wacker Siltronic
7200 NW Front Avenue
Portland, OR 97210

December 15, 2000
Job #: MXA01204Q

Re: Statistical Analysis - Toxicity Tests

30 mL

Coffey Laboratories performed a preliminary Toxicity Identification Evaluation (TIE). The TIE was performed to observe if the toxicity of the effluent could be decreased by using one of four procedures. The procedures performed on the sample were aeration, filtration, passing effluent through C18 and aromatic sulfonic acid columns using only 100 percent effluent. The C18 column was also eluted with methanol to see if the toxicant could be removed from the column. The results are found as percent survial in the table below.

Treatment	Hour 0	Hour 24	Hour 48
Control	100	100	100
No treatment	100	0	0
C18 Control	100	100	100
C18 Effluent	100	50	30
C18 Methanol Elute	100	100	100
SO_3H Control	100	100	100
SO_3H Effluent	100	0	0
1.2 micron Filter	100	0	0
Aeration (18hr)	100	0	0

ump

From the figures above it appears that the only treatment that affected the toxicity was the treatment with the C18 column. This gives a good place to start the TIE. The next step is to do a number of tests using the C18 column.

The test for peroxide, Glycol, and Surfactants are found in the full bioassay report. Results detected were: peroxide at about 1 ppm, glycol from 5 up to 14 ppm and surfactants at 0.05 ppm. These chemicals should be discharged into the OWW system. Please feel free to contact me at 503-254-1794.

Sincerely,
COFFEY LABORATORIES, INC.

Plate Pump

Brian Boling
Aquatic Biologist

your copy
-getting Parametrix
copy for you too
Petra

AQUATIC TOXICOLOGY REPORT:

Prepared for: WACKER SILTRONIC
7200 NW Front Avenue
Portland, OR 97210

Prepared by: COFFEY LABORATORIES, INC.
Portland, OR 97230

AQUATIC TOXICOLOGY REPORT:

CHRONIC DEFINITIVE
BIOASSAYS CONDUCTED
August 31 through September 8, 1999
MX990830T

Ceriodaphnia dubia
Pimephales promelas

Prepared for:

WACKER SILTRONIC
7200 NW Front Avenue
Portland, OR 97210

Prepared by:

COFFEY LABORATORIES, INC.
12423 NE Whitaker Way
Portland, OR 97230

September 30, 1999

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- Data Analysis

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- Chronic Bioassays
- Acute Results
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Appendix B. Reference Toxicant Data Sheets
Appendix C. Chain-of-Custody
Appendix D. Organism History

COFFEY LABORATORIES, INC.
12423 N.E. Whitaker Way • Portland, OR • 97230 • (503) 254-1794 • FAX (503) 254-1452

ANALYTICAL NARRATIVE

Mr. Thomas J. Rothschild
Wacker Siltronic
7200 NW Front Avenue
Portland, OR 97210

September 30, 1999
Job #: MX990830T

Re: Statistical Analysis - Toxicity Tests

Coffey Laboratories, Inc. has completed the statistical analysis of the data collected from dual endpoint toxicity tests which were conducted from 8/31/99 through 9/8/99 on effluent provided by Wacker Siltronic. The enclosed report includes a summary of the *Ceriodaphnia dubia* and Fathead Minnow tests and results, along with the raw data and statistical summaries for the effluent and reference toxicant.

In summary of the statistical analyses, the *Ceriodaphnia dubia* chronic test showed a significant reduction in survival and reproduction at the 25 and 6.25 percent effluent concentrations when compared to survival and reproduction in the controls. Therefore, the chronic No-Observable-Effect-Concentration (NOEC) values for *Ceriodaphnia dubia* survival and reproduction were 12.5 and <6.25 percent effluent respectively. The chronic Lowest-Observable-Effect-Concentration (LOEC) values for *Ceriodaphnia dubia* survival and reproduction were 25 and 6.25 percent effluent, respectively. The chronic LC_{50} value for *Ceriodaphnia dubia* survival was 11.74 percent effluent. The chronic IC_{25} value (an estimate of the effluent concentration causing a 25 percent reduction in biological growth) for *Ceriodaphnia dubia* reproduction was <6.25 percent effluent. The Fathead Minnow chronic test showed a significant difference in survival at the 100 percent effluent concentration when compared to survival in the controls. The chronic NOEC values for Fathead Minnow survival and growth were 50 percent effluent. The LOEC value for Fathead Minnow survival was 100 percent. The chronic LC_{50} value for Fathead Minnow survival was >100 percent effluent, and the chronic IC_{25} value for Fathead Minnow growth was 63.49 percent effluent.

Acute data was derived from the chronic test data in the *Ceriodaphnia dubia* and Fathead Minnow tests. Data from both the *Ceriodaphnia dubia* and Fathead Minnow 48-hour acute tests showed no toxicity at the 100 percent effluent concentrations. Thus, the acute NOEC values for *Ceriodaphnia dubia* and Fathead Minnow survival were both 100 percent effluent.

Coffey Laboratories' Aquatic Toxicology Department is accredited by the Washington State Department of Ecology which demonstrates the high priority we place on Quality Assurance. It is our goal to meet all of your needs by offering the highest quality services in the most efficient manner possible. If you would like further assistance, or should you have other questions regarding Aquatic testing, please feel free to contact me at (503) 254-1794, ext. 241. We look forward to working with you in the future to ensure the health of our Northwest waterways.

Sincerely,
COFFEY LABORATORIES, INC.

Jason Cowley

Jason Cowley
Aquatic Biologist

Approved by,

Sue M. Coffey

Sue Coffey
President

COFFEY LABORATORIES, INC.
12423 N.E. Whitaker Way • Portland, OR • 97230 • (503) 254-1794 • FAX (503) 254-1452

INTRODUCTION

Coffey Laboratories, Inc. conducted two chronic definitive bioassay tests using the water flea (*Ceriodaphnia dubia*) and the Fathead Minnow (*Pimephales promelas*) on samples provided by Wacker Siltronic. The tests were conducted from August 31 through September 8, 1999.

METHODS AND MATERIALS

Test Methods: The chronic test methods were performed according to *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms,* Lewis, P.A. *et al.*; EPA/600/4-91/002 (1994). The acute test results were derived from the chronic data and were analyzed according to *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater Organisms,* Weber, C.I. *et al.*; EPA/600/4-90/027F (1993).

Test Organisms: The *Ceriodaphnia dubia* used in the chronic test were obtained from Coffey Laboratories, Inc. in-house cultures and were less than 24 hours old and within an 8-hour age range at test initiation. The Fathead Minnows used in the chronic test were obtained from Aquatic Biosystems, Inc., Ft. Collins, CO (See Appendix D) and were 24 - 36 hours old at test initiation. All organisms tested were fed and maintained during culturing, acclimation, and testing as prescribed by the EPA/600/4-91/002 (1994). The test organisms appeared vigorous and in good condition prior to testing.

Dilution Water: The dilution water used for the Fathead Minnow and *Ceriodaphnia dubia* tests was reconstituted moderately hard water (EPA/600/4-91/002) with a total hardness and alkalinity of 100 and 60 mg/L as $CaCO_3$, respectively.

Test Concentrations: The concentrations tested in the chronic tests were 6.25, 12.5, 25, 50, and 100 percent effluent and dilution water alone for the control. Ten fish were placed in each of four replicates per concentration for the Fathead Minnow chronic test. For the chronic *Ceriodaphnia* test, 10 organisms per concentration were used with 10 test vessels per concentration and one organism per vessel.

Sample Collection: Samples were collected by Wacker Siltronic personnel on August 30, and September 1, and 3 (See Chains-of-Custody). The samples were picked up by Coffey Laboratories personnel and transported to the laboratory. Samples were stored in the dark at 4°C until test solutions were prepared.

Sample Preparation: The samples used during these tests were diluted and temperature adjusted prior to each daily renewal.

Monitoring of Bioassays: Pre- and post-renewal solutions were monitored for conductivity and dissolved oxygen daily in each concentration, as well as for pH in the control and 100 percent effluent concentration. Additionally, the pH was measured in all the post-renewal solutions of every concentration. Alkalinity and hardness were measured in each new sample (100 percent effluent) and in the control. *Ceriodaphnia dubia* survival and neonate production was monitored daily in the chronic test. According to EPA/600/4-91/002 (1994), *Ceriodaphnia dubia* tests should be terminated when 60 percent or more of the surviving female *Ceriodaphnia* in the controls have produced their third brood and at least 15 neonates per adult. In addition, control organism survival must be equal to or greater than 80 percent. Fathead Minnow mortality was measured daily and fish growth was measured by dry weight analysis at the conclusion of the Fathead Minnow chronic test. Temperature was monitored continuously throughout the 7-day period.

Data Analysis: All statistical analyses were performed using WEST, Inc. computer package, Toxstat, Version 3.5. This program utilizes, among others, Dunnett's, Steel's Many One Rank Sum, and Wilcoxon's Rank Sum Analyses for the hypothesis endpoint estimates, and Probit, Spearman-Karber, and Linear Interpolation methods for point estimates.

The effect measured for acute tests is survival over the exposure period. The effects measured for *Ceriodaphnia dubia* chronic tests are survival and reproduction over the 7-day exposure period. The effects measured for Fathead Minnow chronic tests are survival and growth over the 7-day exposure period. The statistical analyses performed are those outlined in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms,* EPA/600/4-91/002, and *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms,* EPA/600/4-90/027F. Dunnett's, T-test with Bonferroni Adjustment, Steel's Many-One Rank Sum, or Wilcoxon Rank Sum Tests are used to determine the No-Observed-Effect-Concentration (NOEC) and the Lowest-Observed-Effect-Concentration (LOEC) when analyzing the survival and growth data of the Fathead Minnow, as well as the reproduction data of the *Ceriodaphnia dubia*. Fisher's Exact Test is used to analyze the survival data of the *Ceriodaphnia dubia* tests. When the assumptions of normality or homogeneity of variance necessary for Dunnett's Procedure or T-test with Bonferroni Adjustment cannot be met, Steel's Many-One Rank Sum Test or Wilcoxon Rank Sum with Bonferroni Adjustment is used to analyze the data. In addition, the Linear Interpolation method is used to determine the chronic IC_{25} values (the concentration of effluent causing a 25 percent reduction in biological growth) for the Fathead Minnow growth data and the *Ceriodaphnia dubia* reproduction data.

RESULTS AND DISCUSSION

Table 1 summarizes the chronic bioassay results.

Table 1 Chronic Bioassay Results				
	Ceriodaphnia dubia		Fathead Minnow	
Evaluation	Survival (% effluent)	Reproduction (% effluent)	Survival (% effluent)	Growth (% effluent)
NOEC	12.5	<6.25	50	50
LOEC	25	6.25	100	--
Point Estimate	11.74 (LC_{50})	<6.25 (IC_{25})	>100 (LC_{50})	63.49 (IC_{25})

Table 2 summarizes the acute bioassay results.

Table 2 48-Hour Acute Bioassay Results		
	Survival (% effluent)	
Evaluation	*Ceriodaphnia dubia*	Fathead Minnow
NOEC	100	100
LOEC	>100	>100
LC_{50}	>100	>100

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12423 N.E. Whitaker Way • Portland, OR • 97230 • (503) 254-1794 • FAX (503) 254-1452

SCOEPA00018935

RESULTS AND DISCUSSION (Cont.)

Chronic Bioassays:

Table 3 summarizes the survival and growth data for the Fathead Minnow test conducted.

Table 3
Fathead Minnow Results

Sample Concentration (%)	Percent Survival	Mean Dry Weight per Fish (mg)
Control	97.5	0.594
6.25	90	0.472
12.5	100	0.633
25	92.5	0.574
50	92.5	0.500
100	70 *	--

* Indicates a statistically significant reduction from control at $p \leq$ to 0.05 using Steel's Many-One Rank Test or Dunnett's Test.

Results using Steel's Many-One Rank Test showed a statistically significant reduction in survival when compared to the control at the 100 percent effluent concentration. Dunnett's Test showed no further reduction in growth when compared to the control at any effluent concentration. Therefore, the NOEC values for survival and growth were both 50 percent effluent. The LOEC value for survival was 100 percent effluent. Control survival was 97.5 percent.

The chronic LC_{50} value (an estimate of the effluent concentration which is lethal to 50 percent of the test organisms) for Fathead Minnow survival was >100 percent effluent. The chronic IC_{25} value for Fathead Minnow growth was 63.49 percent effluent. The EPA has indicated that the IC_{25} is the approximate analogue of the NOEC (Technical Support Document for Water Quality Based Toxics Control EPA/505/2-90-001, March 1991), making it a valuable indicator of chronic aquatic toxicity.

The dissolved oxygen levels remained above 40 percent saturation throughout the tests. Test temperatures were steady at 25 ± 1°C. The tests proceeded without interruption or incident that could have affected test results.

RESULTS AND DISCUSSION (Cont.)

Chronic Bioassays (Cont.):

Table 4 summarizes the survival and reproduction data for the *Ceriodaphnia dubia* test.

Table 4
***Ceriodaphnia dubia* Results**

Concentration (%)	Percent Survival	Number of Young per Adult
Control	80	15.6
6.25	70	6.9 *
12.5	40	1.7 *
25	20 *	0.7 *
50	0 *	0 *
100	0 *	0 *

* Indicates a statistically significant reduction from control at $p \leq$ to 0.05 using Fisher's Exact Test or Wilcoxon's Rank Sum Test w/ Bonferroni Adjustment.

Results using Fisher's Exact Test showed a statistically significant reduction in survival when compared to the control at the 25, 50, and 100 percent effluent concentrations. In addition, Wilcoxon's Rank Sum Test w/ Bonferroni adjustment showed a reduction in reproduction when compared to the control at the 6.25 and 12.5 percent effluent concentrations. Therefore, the NOEC values for survival and reproduction were 12.5 and <6.25 percent effluent, respectively. The LOEC values for survival and reproduction were 25 and 6.25 percent effluent, respectively. Control survival was 80 percent.

The chronic LC_{50} value for *Ceriodaphnia dubia* survival was 11.74 percent effluent. The chronic IC_{25} value for *Ceriodaphnia dubia* reproduction was <6.25 percent effluent.

The dissolved oxygen levels in the tests remained above 40 percent saturation throughout the test. Test temperatures were steady at 25 ± 1°C. The tests proceeded without interruption or incident that could have affected test results.

RESULTS AND DISCUSSION (Cont.)

Acute Results:

Table 5 summarizes the survival data for the acute screening tests using the Fathead Minnow and the *Ceriodaphnia dubia*.

Table 5
Summary of 48-Hour Acute Results

Species	Concentration (%)	Percent Survival		
		0 Hour	24 Hours	48 Hours
Fathead Minnow	Control	100	100	100
	100	100	97.5	95
Ceriodaphnia dubia	Control	100	100	100
	100	100	90	60

* Indicates a statistically significant reduction from the control at $p \leq 0.05$ using the Modified t-Test or Steel's Many-One Rank Test.

Dual-endpoint testing allows the acute test results to be derived from the chronic test data. In the Fathead Minnow 48-hour acute test, the Modified t-Test showed no statistically significant reduction in survival between the control organisms and those in the 100 percent effluent concentration. In addition, Steel's Many-One Rank Test showed no significant difference in survival between the control organisms and those in the effluent concentrations in the *Ceriodaphnia dubia* 48-hour acute test. Therefore, the acute NOEC values for Fathead Minnow and *Ceriodaphnia dubia* survival were both 100 percent effluent.

RESULTS AND DISCUSSION (Cont.)

Reference Toxicant Tests:

Tables 6 & 7 summarize the results from the *Ceriodaphnia dubia* and the Fathead Minnow chronic and acute reference toxicant tests conducted in August.

Table 6
Chronic Reference Toxicant Tests with Sodium Chloride

Species (test)	Point Estimates	95% C.I.
Pimephales promelas (survival - LC_{50})	3.82 g/L	3.44 - 4.19 g/L
Pimephales promelas (growth - IC_{25})	1.50 g/L	1.47 - 1.53 g/L
Ceriodaphnia dubia (survival - LC_{50})	1.39 g/L	1.17 - 1.60 g/L
Ceriodaphnia dubia (reproduction - IC_{25})	0.61 g/L	0.51 - 0.65 g/L

Table 7
Acute Reference Toxicant Tests

Species	LC_{50}	95% C.I.
Pimephales promelas	5.04 g/L	4.65 - 5.43 g/L
Ceriodaphnia dubia	1.75 g/L	1.75 - 1.75 g/L

The reference toxicant tests with sodium chloride conducted in August showed that test organisms were within their respective sensitivity range based on EPA guidelines (EPA/600/4-91/002, 1994).

The chronic IC_{25} values, as well as the LC_{50} values and the respective 95 percent confidence intervals are listed in the Tables above. The data sheets for the reference toxicant tests are provided in Appendix B.

WATER QUALITY PARAMETERS

Lab Sample ID: 990830T-1
Field ID: 99-85
Date/Time: 08/30/99 0800
Matrix: Waste Water

EPA Category: Conventional Parameters

Parameter	Method	Detection Limit	Analytical Result	Units
Conductivity	EPA 120.1	0.5	920.	μmhos/cm
Alkalinity	EPA 310.1	0.5	16.	mg/L
Residual Chlorine	SM 4500-Cl-G	0.05	ND	mg/L
Total Chlorine	SM 4500-Cl-G	0.05	ND	mg/L
Chloramine	SM 4500-Cl-G	0.05	ND	mg/L
Ammonia Nitrogen	SM4500-NH3-B/C	0.2	ND	mg/L

ND means none detected at or above the detection limit listed.

EPA Category: Metals

Parameter	Method	Detection Limit	Analytical Result	Units
Total Hardness	SM 2340-B	0.5	210.	mg/L
Calcium	EPA 200.7	0.3	78.	mg/L
Magnesium	EPA 200.7	0.05	3.6	mg/L

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WATER QUALITY PARAMETERS (cont.)

Lab Sample ID: 990830T-2
Field ID: 99-86
Date/Time: 09/01/99 0800
Matrix: Waste Water

EPA Category: Conventional Parameters

Parameter	Method	Detection Limit	Analytical Result	Units
Conductivity	EPA 120.1	0.5	2300.	μmhos/cm
Alkalinity	EPA 310.1	1.	13.	mg/L
Residual Chlorine	SM 4500-Cl-G	0.05	ND	mg/L
Total Chlorine	SM 4500-Cl-G	0.05	ND	mg/L
Chloramine	SM 4500-Cl-G	0.05	ND	mg/L
Ammonia Nitrogen	SM4500-NH3-B/C	0.2	0.8	mg/L

ND means none detected at or above the detection limit listed.

EPA Category: Metals

Parameter	Method	Detection Limit	Analytical Result	Units
Total Hardness	SM 2340-B	0.5	1000.	mg/L
Calcium	EPA 200.7	3.	400.	mg/L
Magnesium	EPA 200.7	0.25	9.	mg/L

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WATER QUALITY PARAMETERS (cont.)

Lab Sample ID: 990830T-3
Field ID: 99-86
Date/Time: 09/03/99 0745
Matrix: Waste Water

EPA Category: Conventional Parameters

Parameter	Method	Detection Limit	Analytical Result	Units
Conductivity	EPA 120.1	0.5	840.	μmhos/cm
Alkalinity	EPA 310.1	0.5	12.	mg/L
Residual Chlorine	SM 4500-Cl-G	0.05	ND	mg/L
Total Chlorine	SM 4500-Cl-G	0.05	ND	mg/L
Chloramine	SM 4500-Cl-G	0.05	ND	mg/L
Ammonia Nitrogen	SM4500-NH3-B/C	0.2	0.4	mg/L

ND means none detected at or above the detection limit listed.

EPA Category: Metals

Parameter	Method	Detection Limit	Analytical Result	Units
Total Hardness	SM 2340-B	0.5	165.	mg/L
Calcium	EPA 200.8	0.05	64.	mg/L
Magnesium	EPA 200.8	0.05	1.2	mg/L

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APPENDIX A

RAW DATA SHEETS

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CHRONIC RENEWAL LARVAE TOXICITY TEST - QUALITY ASSURANCE PARAMETERS

Job Number: MX990830T
Custabbr: Wackersilt
Sample/Source Name: EFC

Test Organism: FHM
Dates Delivered: 8/30, 9/1, 9/3
Dates Collected: " " "

Test Initiation: 8-31-99
Test Conclusion: 9/7/99
Dechlorination: —

Analyst(s): [illegible]
Reviewed by: [illegible]

Conc.	Day	Date	Initials	MEASUREMENTS pH New	pH Old	DO New	DO Old	Sp. Cond. New	Sp. Cond. Old	(mg/L) Alkalinity	Hardness	Ammonia	Chlorine
0%	0	8/31	[illegible]	7.71	—	8.4	—	347	—				
	1	9/1	[illegible]	7.65	7.64	8.4	8.1	363	357				
	2	9/2	[illegible]	7.61	7.69	8.2	7.9	352	370				
	3	9/3	[illegible]	7.71	7.66	8.3	7.5	333	361				
	4	9/4	[illegible]	7.59	7.70	8.3	7.2	341	340				
	5	9/5	[illegible]	7.48	7.61	8.4	7.0	339	343				
	6	9/6	[illegible]	7.38	7.37	8.4	6.6	319	322				
	7	9/7	[illegible]	—	7.39	—	6.4	—	326				
6.25%	0	8/31	[illegible]	—	—	8.3	—	398	—				
	1	9/1	[illegible]	—	7.59	8.4	7.9	393	390				
	2	9/2	[illegible]	—	7.64	8.2	7.8	451	396				
	3	9/3	[illegible]	—	7.62	8.4	7.5	460	472				
	4	9/4	[illegible]	—	7.62	8.3	7.3	351	468				
	5	9/5	[illegible]	—	7.60	8.3	6.8	350	362				
	6	9/6	[illegible]	—	7.33	8.3	6.5	347	340				
	7	9/7	[illegible]	—	7.40	—	6.4	—	371				
12.5%	0	8/31	[illegible]	—	—	8.3	—	416	—				
	1	9/1	[illegible]	—	7.58	8.4	7.8	428	426				
	2	9/2	[illegible]	—	7.62	8.2	7.8	540	431				
	3	9/3	[illegible]	—	7.60	8.4	7.5	539	552				
	4	9/4	[illegible]	—	7.60	8.2	7.4	~~543~~ 534	513				
	5	9/5	[illegible]	—	7.55	8.2	6.8	387	399				
	6	9/6	[illegible]	—	~~7.33~~ 7.46	8.4	6.5	380	391				
	7	9/7	[illegible]	—	7.42	—	6.5	—	398				
25%	0	8/31	[illegible]	—	—	8.3	—	471	—				
	1	9/1	[illegible]	—	7.55	8.4	7.6	489	495				
	2	9/2	[illegible]	—	7.60	8.2	7.8	815	499				
	3	9/3	[illegible]	—	7.58	8.4	7.4	821	837				
	4	9/4	[illegible]	—	7.60	8.2	7.4	451	859				
	5	9/5	[illegible]	—	7.51	8.2	6.8	448	462				
	6	9/6	[illegible]	—	7.43	8.4	6.5	442	459				
	7	9/7	[illegible]	—	7.50	—	6.5	—	463				

Comments:

CHRONIC RENEWAL LARVAE TOXICITY TEST - QUALITY ASSURANCE PARAMETERS

Lab Number: MX990830T
Custabbr: Wackersilf
Sample/Source Name: EFF.

Test Organism: FHM
Dates Delivered:
Dates Collected:

Test Initiation: 8/31/99
Test Conclusion: 9/7/99
Dechlorination:

Analyst(s):
Reviewed by:

Conc.	Day	Date	Initials	MEASUREMENTS pH New	pH Old	DO New	DO Old	Sp. Cond. New	Sp. Cond. Old	(mg/L) Alkalinity	Hardness	Ammonia	Chlorine
50%	0	8/31		—	—	8.3	—	619	—				
	1	9/1		—	7.50	8.4	7.5	625	634				
	2	9/2		—	7.52	8.2	7.6	1210	640				
	3	9/3		—	7.49	8.4	7.4	1237	1292				
	4	9/4		—	7.56	8.2	7.4	~~1244~~ 570	1241				
	5	9/5		—	7.42	8.2	6.8	581	591				
	6	9/6		—	7.39	8.4	6.5	568	596				
	7	9/7		—	7.56	—	6.5	—	602				
100%	0	8/31		7.39	—	8.3	—	910	—				
	1	9/1		7.41	7.47	8.4	7.4	904	917				
	2	9/2		~~7.24~~	7.31	8.3	7.6	2200	910				
	3	9/3		7.19	7.31	8.4	7.4	2190	2310				
	4	9/4		7.41	7.24	8.2	7.3	830	2240				
	5	9/5		7.40	7.46	8.2	6.8	823	854				
	6	9/6		7.39	7.36	8.4	6.5	819	869				
	7	9/7		—	7.60	—	4.5	—	878				
	0												
	1												
	2												
	3												
	4												
	5												
	6												
	7												
	0												
	1												
	2												
	3												
	4												
	5												
	6												
	7												

Comments:

CHRONIC RENEWAL LARVAE TOXICITY TEST

Job Number: MX9908030T
Custabbr: Wackersilt
Sample/Source Name: Eff

Test Organism: FHM
Dates Delivered: 8/31, 9/1, 9/3
Dates Collected: " " "

Test Initiation: 8/31/99 @ 14:00
Test Conclusion: 9/7/99 @ 14:30
H_2O Batch #: 990831
Feeding Regime: 0.1 ml Artemia, 3x/daily

Analyst(s): [illegible]
Reviewed by:
Randomization Chart #:

Conc.	Rep.	Number Organisms/ Container	Immobile/Mortality 0	24	48	72	96	120	144	168	Total Mort.	Temperature (°C) 0	24	48	72	96	120	144	168
Pink	1	10	0	0	0	0	0	0	0	0	0	25						25	
	2	10	0	0	0	0	0	0	0	0	0		25				25		
	3	10	0	0	0	0	0	0	0	0	0			25		25			
	4	10	0	0	0	0	0	0	0	0	0				24.5				
Green	1	10	0	1	0	X2	0	0	0	0	3	25						25	
	2	10	0	0	0	1	1	1	0	0	3		25				25		
	3	10	0	0	1	0	1	0	0	1	3			25		25			
	4	10	0	0	0	1	1	1	0	0	3				25				
Red	1	10	0	0	0	0	0	0	0	1	1	25						25	
	2	10	0	0	0	0	0	1	0	0	1		25				25		
	3	10	0	0	0	0	0	0	0	0	0			25		25			
	4	10	0	0	0	0	0	2	0	0	2				24.5				
Orange	1	10	0	0	0	0	0	0	0	0	0	25						25	
	2	10	0	0	0	0	0	0	0	0	0		25				25		
	3	10	0	0	0	0	1	0	0	0	1			25		25			
	4	10	0	0	0	0	0	0	0	0	0				25				
Yellow	1	10	0	0	0	0	0	0	0	0	0	25						25	
	2	10	0	X1	0	0	0	0	0	0	1		25				25		
	3	10	0	0	0	0	2	0	0	0	2			25		25			
	4	10	0	0	0	0	0	0	0	0	0				25				
Blue	1	10	0	0	0	0	0	0	0	0	0	25						25	
	2	10	0	0	0	0	0	0	0	0	0		25				25		
	3	10	0	0	0	X1	1	0	0	0	2			25		25			
	4	10	0	0	0	0	0	0	0	1	1				25				
	1																		
	2																		
	3																		
	4																		

ANALYST: [illegible]

Comments:

CHRONIC RENEWAL LARVAE GROWTH DATA

Job Number: MX990830T
Test Dates: 8/31/99 - 9/7/99
Weighing Date: 9/9/99
Analyst: JC

Custabbr: WACKERSILT
Drying Temp.: 102°C
Drying Time (h): 24 hrs.
Reviewed by: _____

Conc.	Rep. No.	A Wt. of dry boat (g)	B Dry wt. boat & larvae (g)	B-A Total dry wt. of larvae (mg)	C No. of larvae	(B-A)/C Mean dry wt. of larvae (mg)	Average wt. per conc. (mg)
Control	1	1.08343	1.08969	6.260	10	0.626	
	2	1.06849	1.07610	7.610	10	0.761	
0 %	3	1.07940	1.08544	6.040	10	0.604	
	4	1.08094	1.08477	3.830	10	0.383	0.594
Conc.	1	1.08256	1.08688	4.320	10	0.432	
	2	1.08442	1.08990	5.480	10	0.548	
6.25 %	3	1.07344	1.07841	4.970	10	0.497	
	4	1.09227	1.09637	4.100	10	0.410	0.472
Conc.	1	1.07717	1.08282	5.650	10	0.565	
	2	1.08959	1.09616	6.570	10	0.657	
12.5 %	3	1.08880	1.09558	6.780	10	0.678	
	4	1.07695	1.08328	6.330	10	0.633	0.633
Conc.	1	1.09626	1.10283	6.570	10	0.657	
	2	1.08907	1.09310	4.030	10	0.403	
25 %	3	1.07624	1.08241	6.170	10	0.617	
	4	1.08065	1.08685	6.200	10	0.620	0.574
Conc.	1	1.07978	1.08355	3.770	10	0.377	
	2	1.08098	1.08694	5.960	10	0.596	
50 %	3	1.07909	1.08312	4.030	10	0.403	
	4	1.09668	1.10293	6.250	10	0.625	0.500
Conc.	1	1.08075	1.08448	3.730	10	0.373	
	2	1.08357	1.08587	2.300	10	0.230	
100 %	3	1.08365	1.08709	3.440	10	0.344	
	4	1.08298	1.08535	2.370	10	0.237	0.296

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Revision #: 1.00
Revision Date: 11/18/93

CHRONIC RENEWAL LARVAE GROWTH DATA

Job Number: MX990830T
Test Dates: 8/31/99 - 9/7/99
Weighing Date: 9/9/99
Analyst: [illegible]

Custabbr: Wickersilt
Drying Temp. (°C): 102° C
Drying Time (h): 24 hrs.
Reviewed by:

Conc.	Rep. No.	A Wt. of dry boat (g)	B Dry wt. boat & larvae (g)	B-A Total dry wt. of larvae (g)	C No. of larvae	(B-A)/C Mean dry wt. of larvae (g)	Remarks
Control 0%	1	1.08343	1.08969				
	2	1.06849	1.07610				
	3	1.07940	1.08544				
	4	1.08094	1.08477				
Conc. 6.25%	1	1.08256	1.08688				
	2	1.08442	1.08990				
	3	1.07344	1.07841				
	4	1.09227	1.09637				
Conc. 12.5%	1	1.07717	1.08282				
	2	1.08959	1.09616				
	3	1.08880	1.09558				
	4	1.07695	1.08328				
Conc. 25%	1	1.09626	1.10283				
	2	1.08907	1.09310				
	3	1.07624	1.08241				
	4	1.08065	1.08685				
Conc. 50%	1	1.07978	1.08355				
	2	1.08098	1.08694				
	3	1.07909	1.08312				
	4	1.09668	1.10293				
Conc. 100%	1	1.08075	1.08448				
	2	1.08357	1.08587				
	3	1.08365	1.08709				
	4	1.08298	1.08535				

Title: WACKER FATHEAD CHRONIC - SURVIVAL, 8/31/99
File: 0830tfs Transform: ARC SINE(SQUARE ROOT(Y))

Shapiro - Wilk's Test for Normality

D = 0.1961
W = 0.9056

Critical W = 0.8840 (alpha = 0.01 , N = 24)
W = 0.9160 (alpha = 0.05 , N = 24)

Data PASS normality test (alpha = 0.01). Continue analysis.

Title: WACKER FATHEAD CHRONIC - SURVIVAL, 8/31/99
File: 0830TFS . Transform: ARC SINE(SQUARE ROOT(Y))

Hartley's Test for Homogeneity of Variance
Bartlett's Test for Homogeneity of Variance

These two tests can not be performed because at least one group has zero variance.

Data FAIL to meet homogeneity of variance assumption.
Additional transformations are useless.

Title: WACKER FATHEAD CHRONIC - SURVIVAL, 8/31/99
File: 0830TFS . Transform: ARC SINE(SQUARE ROOT(Y))

Steel's Many-One Rank Test - Ho: Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	RANK SUM	CRIT. VALUE	DF	SIG 0.05
1	0 CONTROL	1.3713				
2	6.25 %	1.2543	13.50	10.00	4.00	
3	12.5 %	1.4120	20.00	10.00	4.00	
4	25 %	1.2951	15.50	10.00	4.00	
5	50 %	1.2951	15.50	10.00	4.00	
6	100 %	0.9912	10.00	10.00	4.00	*

Critical values are 1 tailed (k = 5)

Title: WACKER FATHEAD CHRONIC - SURVIVAL, 8/31/99
File: 0830TF5 Transform: NO TRANSFORMATION

Chi-Square Test for Normality

Actual and Expected Frequencies

INTERVAL	<-1.5	-1.5 to <-0.5	-0.5 to 0.5	>0.5 to 1.5	>1.5
EXPECTED	1.2060	4.3560	6.8760	4.3560	1.2060
OBSERVED	0	8	4	6	0

Chi-Square = 7.2838 (p-value = 0.1216)

Critical Chi-Square = 13.277 (alpha = 0.01 , df = 4)
= 9.488 (alpha = 0.05 , df = 4)

Data PASS normality test (alpha = 0.01). Continue analysis.

Title: WACKER FATHEAD CHRONIC - SURVIVAL, 8/31/99
File: 0830TF5 Transform: NO TRANSFORMATION

Probit Analysis - not Using Smoothed Proportions

DOSE	NUMBER SUBJECTS	NUMBER OBSERVED	OBSERVED PROPORTION	PREDICTED PROPORTION
6.25	40	4	0.1000	0.0423
12.50	40	0	0.0000	0.0495
25.00	40	3	0.0750	0.0670
50.00	40	3	0.0750	0.1156
100.00	40	12	0.3000	0.2761

Est. Mu = 149.3029 Est. Sigma = 82.9419
sd = 28.4296 sd = 22.6634

Chi-Square lack of fit = 6.1747 Likelihood lack of fit = 7.3523
Table Chi-square = 11.3449 (alpha = 0.01, df = 3)
Table Chi-square = 7.8147 (alpha = 0.05, df = 3)

Title: WACKER FATHEAD CHRONIC - SURVIVAL, 8/31/99
File: 0830TF5 Transform: NO TRANSFORMATION

Probit LC Estimates
WITHOUT CONTROL DATA

POINT	EST. END POINT	95% CONFIDENCE LIMITS	
LC 1	-43.6488	-98.8742	11.5765
LC 5	12.8756	-16.3503	42.1015
LC10	43.0086	22.2093	63.8079
LC20	79.4973	54.6095	104.3850
LC25	93.3595	63.5173	123.2016
LC30	105.8081	70.7652	140.8511
LC40	128.2898	82.8732	173.7064
LC50	149.3029	93.5809	205.0250
LC60	170.3160	103.9796	236.6525
LC70	192.7977	114.9061	270.6894
LC75	205.2464	120.8979	289.5949
LC80	219.1086	127.5347	310.6825
LC90	255.5973	144.8787	366.3159
LC95	285.7303	159.1101	412.3504
LC99	342.2547	185.6753	498.8341

Title: WACKER FATHEAD CHRONIC - GROWTH, 8/31/99
File: 0830tfg Transform: NO TRANSFORMATION

Shapiro - Wilk's Test for Normality

D = 0.1821
W = 0.9641

Critical W = 0.8680 (alpha = 0.01 , N = 20)
W = 0.9050 (alpha = 0.05 , N = 20)

Data PASS normality test (alpha = 0.01). Continue analysis.

Title: WACKER FATHEAD CHRONIC - GROWTH, 8/31/99
File: 0830tfg Transform: NO TRANSFORMATION

Bartlett's Test for Homogeneity of Variance

Calculated B1 statistic = 4.3333 (p-value = 0.3628)

Data PASS B1 homogeneity test at 0.01 level. Continue analysis.

Critical B = 13.2767 (alpha = 0.01, df = 4)
= 9.4877 (alpha = 0.05, df = 4)

Title: WACKER FATHEAD CHRONIC - GROWTH, 8/31/99
File: 0830tfg Transform: NO TRANSFORMATION

ANOVA Table

SOURCE	DF	SS	MS	F
Between	4	0.0716	0.0179	1.4749
Within (Error)	15	0.1821	0.0121	
Total	19	0.2537		

(p-value = 0.2591)

Critical F = 4.8932 (alpha = 0.01, df = 4,15)
= 3.0556 (alpha = 0.05, df = 4,15)

Since F < Critical F FAIL TO REJECT Ho: All equal (alpha = 0.05)

Title: WACKER FATHEAD CHRONIC - GROWTH, 8/31/99
File: 0830tfg Transform: NO TRANSFORMATION

Dunnett's Test - TABLE 1 OF 2 Ho:Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG 0.05
1	0 CONTROL	0.5935	0.5935		
2	6.25 %	0.4717	0.4717	1.5628	
3	12.5 %	0.6332	0.6332	-0.5102	
4	25.0 %	0.5742	0.5742	0.2471	
5	50.0 %	0.5003	0.5003	1.1970	

Dunnett critical value = 2.3600 (1 Tailed, alpha = 0.05, df = 4,15)

Title: WACKER FATHEAD CHRONIC - GROWTH, 8/31/99
File: 0830tfg Transform: NO TRANSFORMATION

Dunnett's Test - TABLE 2 OF 2 Ho:Control<Treatment

GROUP	IDENTIFICATION	NUM OF REPS	MIN SIG DIFF (IN ORIG. UNITS)	% OF CONTROL	DIFFERENCE FROM CONTROL
1	0 CONTROL	4			
2	6.25 %	4	0.1839	31.0	0.1218
3	12.5 %	4	0.1839	31.0	-0.0397
4	25.0 %	4	0.1839	31.0	0.0193
5	50.0 %	4	0.1839	31.0	0.0933

Title: WACKER FATHEAD CHRONIC - GROWTH, 8/31/99
File: 0830tfi Transform: NO TRANSFORMATION

GRP	IDENTIFICATION	MEAN	SMOOTHED MEAN	CONCENTRATION
1	0 CONTROL	0.5935	0.5935	0.0000
2	6.25 %	0.4717	0.5597	6.2500
3	12.5 %	0.6332	0.5597	12.5000
4	25.0 %	0.5742	0.5597	25.0000
5	50.0 %	0.5003	0.5003	50.0000
6	100.0 %	0.2960	0.2960	100.0000

ICp estimate with p = 25 is 63.4945

Bootstrap estimate did not exist for 4 iterations.
Bootstrap results using 476 iterations:

Mean = 57.1070 Standard Deviation = 14.3754
95% Confidence Interval: (22.2030 , 78.5781)
Adjusted Interval: (-2.5718 , 87.6283)

Title: WACKER FATHEAD ACUTE - 8/31/99
File: 0830tfa Transform: ARC SINE(SQUARE ROOT(Y))

Shapiro - Wilk's Test for Normality

D = 0.0266
W = 0.8493

Critical W = 0.7490 (alpha = 0.01 , N = 8)
W = 0.8180 (alpha = 0.05 , N = 8)

Data PASS normality test (alpha = 0.01). Continue analysis.

Title: WACKER FATHEAD ACUTE - 8/31/99
File: 0830tfa Transform: ARC SINE(SQUARE ROOT(Y))

F-Test for Equality of Two Variances

GROUP	IDENTIFICATION	VARIANCE	F
1	0 CONTROL	0.0000	
2	100 %	0.0089	99999.0000

(p-value = 0.0000)

Critical F = 47.4672 (P=0.01, 3, 3)
15.4392 (P=0.05, 3, 3)

Since F > Critical F, REJECT Ho: Equal Variances (alpha = 0.01).

NOTE: This test requires positive variances. If one of the variances is zero, the test will always reject Ho: Equal Variances.

Title: WACKER FATHEAD ACUTE - 8/31/99
File: 0830tfa Transform: ARC SINE(SQUARE ROOT(Y))

ANOVA Table

SOURCE	DF	SS	MS	F
Between	1	0.0133	0.0133	3.0000
Within (Error)	6	0.0266	0.0044	
Total	7	0.0398		

(p-value = 0.1340)

Critical F = 13.7450 (alpha = 0.01, df = 1,6)
= 5.9874 (alpha = 0.05, df = 1,6)

Since F < Critical F FAIL TO REJECT Ho: All equal (alpha = 0.05)

Title: WACKER FATHEAD ACUTE - 8/31/99
File: 0830tfa Transform: ARC SINE(SQUARE ROOT(Y))

2 Sample t-Test - TABLE 1 OF 2 Ho: Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	TRANS t STAT	SIG 0.05
1	0 CONTROL	1.4120	1.0000		
2	100 %	1.3305	0.9500	1.7321	

Equal Var: t critical value = 1.9432 (1 Tailed, alpha = 0.05, df = 6)
(p-value = 0.0670)

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	TRANS T STAT	SIG 0.05
1	0 CONTROL	1.4120	1.0000		
2	100 %	1.3305	0.9500	1.7321	

Unequal Var: t critical value = 2.3534 (1 Tailed, alpha = 0.05, df = 3)
(p-value = 0.0908)

Title: WACKER FATHEAD ACUTE - 8/31/99
File: 0830tfa Transform: ARC SINE(SQUARE ROOT(Y))

2 Sample t-Test - TABLE 2 OF 2 Ho: Control<Treatment

Equal Variances:

GROUP	IDENTIFICATION	NUM OF REPS	MIN SIG DIFF (IN ORIG. UNITS)	% OF CONTROL	DIFFERENCE FROM CONTROL
1	0 CONTROL	4			
2	100 %	4	0.0363	3.7	0.0500

Unequal Variances:

GROUP	IDENTIFICATION	NUM OF REPS	MIN SIG DIFF (IN ORIG. UNITS)	% OF CONTROL	DIFFERENCE FROM CONTROL
1	0 CONTROL	4			
2	100 %	4	0.0459	4.7	0.0500

CERIODAPHNIA TOXICITY TEST: WATER QUALITY PARAMETERS

Lab Number: MX990830T
Substabbr: Wackersilt
Sample/Source Name: 4EE

Test Organism: C. dubia
Dates Delivered: 8/30, 9/1, 9/2
Dates Collected: " " "

Test Initiation: 8/31/99
Test Conclusion: 9/8/99
Dechlorination: —

Analyst(s): [illegible]
Reviewed by: [illegible]

Conc.	Day	Date	Analyst Initials	Temp. (°C)	pH New	pH Old	DO New	DO Old	Sp. Cond. New	Sp. Cond. Old	Alkalinity (mg/L)	Hardness (mg/L)	Ammonia (mg/L)	Chlorine (mg/L)
0%	0	8/31	[illegible]	24.5	7.61	—	8.2	—	361	—				
	1	9/1	[illegible]	25	7.55	7.75	8.1	8.1	374	373				
	2	9/2	[illegible]	24	7.68	7.71	8.2	8.0	341	380				
	3	9/3	[illegible]	25	7.69	7.61	8.4	8.2	351	347				
	4	9/4	[illegible]	25	7.59	7.68	8.3	8.2	339	361				
	5	9/5	[illegible]	24.5	7.62	7.69	8.2	8.1	348	360				
	6	9/6	[illegible]	25	7.53	7.63	8.4	8.0	351	357				
	7	9/7	[illegible]	25	~~7.53~~ 7.62	7.61	~~8.4~~ 8.3	8.0	327	328				
	8	9/8	[illegible]	—	—	7.64	—	8.0	—	339				
6.25%	0	8/31	[illegible]	25	—	~~7.73~~	8.2	—	390	—				
	1	9/1	[illegible]	25	—	7.73	8.1	8.2	400	397				
	2	9/2	[illegible]	24.5	—	7.70	8.2	8.3	460	408				
	3	9/3	[illegible]	25	—	7.69	8.2	8.2	462	481				
	4	9/4	[illegible]	25	—	7.60	8.3	8.1	350	475				
	5	9/5	[illegible]	25	—	7.60	8.3	8.2	347	362				
	6	9/6	[illegible]	25	—	7.61	8.2	8.2	340	351				
	7	9/7	[illegible]	25	—	~~7.61~~ 7.60	8.2	8.6	348	353				
	8	9/8	[illegible]	—	—		—	8.0	—	352				
12.5%	0	8/31	[illegible]	25	—	—	8.3	—	420	—				
	1	9/1	[illegible]	25	—	7.72	8.2	8.2	428	434				
	2	9/2	[illegible]	25	—	7.68	8.2	8.1	551	437				
	3	9/3	[illegible]	25	—	7.62	8.3	8.1	562	560				
	4	9/4	[illegible]	25	—	7.61	8.3	8.1	390	571				
	5	9/5	[illegible]	25	—	7.56	8.2	8.1	381	396				
	6	9/6	[illegible]	25	—	7.61	8.2	8.1	380	399				
	7	9/7	[illegible]	25	—	7.60	8.2	8.1	379	384				
	8	9/8	[illegible]	—	—	7.60	—	8.1	—	382				
25%	0	8/31	[illegible]	25	—	—	8.3	—	488	—				
	1	9/1	[illegible]	24.5	—	7.68	8.2	8.2	497	506				
	2	9/2	[illegible]	25	—	7.67	8.2	8.1	826	502				
	3	9/3	[illegible]	25	—	7.59	8.4	8.1	830	829				
	4	9/4	[illegible]	25	—	7.58	8.4	8.1	446	839				
	5	9/5	[illegible]	25	—	7.59	8.2	8.1	451	450				
	6	9/6	[illegible]	25	—	7.50	8.2	8.1	438	462				
	7	9/7	[illegible]	25	—	7.60	8.2	8.0	432	459				
	8	9/8	[illegible]	—	—	7.60	—	8.0	—	461				

Green

Clear

Blue

Yellow

CERIODAPHNIA TOXICITY TEST: WATER QUALITY PARAMETERS

Number: MX990830T
Abbr: Walkersilt
Sample/Source Name: [illegible]

Test Organism: C. dubia
Dates Delivered:
Dates Collected:

Test Initiation: 8/31/99
Test Conclusion:
Dechlorination:

Analyst(s): [illegible]
Reviewed by: [illegible]

Conc.	Day	Date	Analyst Initials	Temp. (°C)	MEASUREMENTS pH New	pH Old	DO New	DO Old	Sp. Cond. New	Sp. Cond. Old	(mg/L) Alkalinity	Hardness	Ammonia	Chlorine
50%	0	8/31	[illegible]	25	—	—	8.3	—	620	—				
	1	9/1	[illegible]	25	—	7.64	8.2	8.2	629	655				
	2	9/2	[illegible]	24.5	—	7.60	8.3	8.1	1311	632				
	3	9/3	[illegible]	25	—	7.58	8.4	8.2	1291	1312				
	4	9/4	[illegible]	25	—	7.57	8.4	8.2	581	1299				
	5	9/5	[illegible]	25	—	7.48	8.4	8.2	590	596				
	6	9/6	[illegible]	25	—	7.46	8.3	8.2	564	607				
	7	9/7	[illegible]	—	—	7.41	—	8.1	—	591				
	8	9/8												
100%	0	8/31	[illegible]	25	7.59	—	8.3	—	911	—				
	1	9/1	[illegible]	25	7.64	7.62	8.4	8.2	905	928				
	2	9/2	[illegible]	24	7.21	7.71	8.4	8.1	2260	916				
	3	9/3	[illegible]	25	7.26	7.31	8.4	8.1	2190	2310				
	4	9/4	[illegible]	24.5	7.40	7.28	8.4	8.1	821	2260				
	5	9/5	[illegible]	25	7.40	7.39	8.3	8.2	840	846				
	6	9/6	[illegible]	24	7.44	7.39	8.3	8.3	833	847				
	7					7.46		8.3		840				
	8													
	0													
	1													
	2													
	3													
	4													
	5													
	6													
	7													
	8													
	0													
	1													
	2													
	3													
	4													
	5													
	6													
	7													
	8													

CHRONIC RENEWAL CERIODAPHNIA TOXICITY TEST: SURVIVAL AND REPRODUCTION DATA

Lab Number: NX990830T
Custabbr: Wackersitt
Sample/Source Name:

Test Organism: C dubia
Dates Delivered: 8/30, 9/1, 9/2
Dates Collected: " " "

Test Initiation: 8/31/99 @ 10:30
Test Conclusion: 9/8/99 @ 11:00
H_2O Batch #: 990831
Feeding Regime: 0.1 ml Sel & YCT, 1x/daily

Analyst(s):
Reviewed by:
Randomization Chart #:

Conc. % g/L	Rep.	Number Organisms @ Start	0	1	2	3	4	5	6	7	8	Total Mort.	0	1	2	3	4	5	6	7	8	Total Offspring
Low	1	1	0	0	1							1	0	0	0							0
	2	1			1							1			0							0
	3	1			0	0	0	1	1			1		1	0	0	0	0				0
	4	1		1	0	0	0	1				1		1	0	0	0	0				0
	5	1		1								1										0
	6	1		0	0	0	0	1				1		0	0	0	0	0				0
	7	1		0	0	0	0	0	0	0	0	0		0	0	0	0	1	0	0	2	3
	8	1		1								1										0
	9	1		0	0	0	0	0	0	0	0	0		0	0	0	0	2	0	2	0	4
	10	1	1	0	0	0	0	1				1	1	0	0	0	0	0				0
Med	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2
	2	1						1	1	1		1					0	0	0	0		0
	3	1						1	1	0	0	0					0	1	0	0	0	1
	4	1						1				1					0	0				0
	5	1					1	0	1			1					0	0	0			0
	6	1						1				1					0					0
	7	1					0	0	0	1		1					0	0	2	0		2
	8	1					0		0	0	0	0					0	0	3	0	0	3
	9	1					0	1	1								2	0	0			2
	10	1	1	1	1	1	0	1	0	0	0	0	1	1	1	1	0	0	3	4	0	7
High	1	1	0	0	0	0	1					1	0	0	0	0	0					0
	2	1										1										0
	3	1			0	0	0	0	0	1		1				0	0	0	0	0		0
	4	1			0	1						1				0						0
	5	1			0	1						1				0						0
	6	1		1	0	1						1		1	1	0						0
	7	1										1										0
	8	1		0	1							1		0	0							0
	9	1		0	1							1		0	0							0
	10	1	1	0	0	1						1	1	0	0	0						0
Control	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	1							0	0	0	0					1	0	0	0	1	0
	3	1							0			1					0	0	0			0
	4	1						1	0	1		1					0	0	0	0		0
	5	1										1					0	0				0
	6	1						0	0	0	0	0					0	0	0	1	0	1
	7	1							0		0	0					3	0	3	4	3	13
	8	1							0		0	0					2	0	0	0	3	5
	9	1						1	0		0	0					1	0	2	5	4	12
	10	1	1	1	1	1	1	1	0	1	0	0	1	1	1	1	2	5	0	10	6	23
Screen	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	3	0	12	16
	2	1					0				0	0					4	5	0	10	0	19
	3	1					0				0	0					0	0	0	0	0	0
	4	1					0	1	1	1	0	0					1	4	3	0	10	18
	5	1					1					1					5					5
	6	1					0	0	0	1		1					3	5	1	0		9
	7	1								0	0	0					4	0	3	3	8	18
	8	1									0	0					0	0	0	0	0	0
	9	1									0	0					4	0	2	6	9	21
	10	1	1	1	1	1	1	1	1	1	0	0	1	1	1	1	3	0	4	0	12	19
Blank	1	1	0	0	0	1						1	0	0	0	0						0
	2	1				0	0	1				1				0	0	0				0
	3	1					0	1				1					0	0				0
	4	1					0	1				1					0	0				0
	5	1					1					1					0					0
	6	1			1	1	0	0	0	1		1				1	0	0	0	0		0
	7	1										1										0
	8	1			0	0	1					1				0	0					0
	9	1			0	0	0	1				1				0	0	0				0
	10	1	1	1	1	1						1	1	1	1							0

ANALYST:

Comments:

Fisher's Exact Test

IDENTIFICATION	NUMBER OF ALIVE	NUMBER OF DEAD	TOTAL ANIMALS
CONTROL	8	2	10
6.25 %	7	3	10
TOTAL	15	5	20

Critical Fisher's value (10,10,8) (alpha=0.05) is 3.0. b value is 7.
Since b is greater than 3.0 there is no significant difference between CONTROL and TREATMENT at the 0.05 level.

Fisher's Exact Test

IDENTIFICATION	NUMBER OF ALIVE	NUMBER OF DEAD	TOTAL ANIMALS
CONTROL	8	2	10
12.5 %	4	6	10
TOTAL	12	8	20

Critical Fisher's value (10,10,8) (alpha=0.05) is 3.0. b value is 4.
Since b is greater than 3.0 there is no significant difference between CONTROL and TREATMENT at the 0.05 level.

Fisher's Exact Test

IDENTIFICATION	NUMBER OF ALIVE	NUMBER OF DEAD	TOTAL ANIMALS
CONTROL	8	2	10
25.0 %	2	8	10

TOTAL	10	10	20

Critical Fisher's value (10,10,8) (alpha=0.05) is 3.0. b value is 2.
Since b is less than or equal to 3.0 there is a significant difference between CONTROL and TREATMENT at the 0.05 level.

Fisher's Exact Test

	NUMBER OF		
IDENTIFICATION	ALIVE	DEAD	TOTAL ANIMALS
CONTROL	8	2	10
50.0 %	0	10	10
TOTAL	8	12	20

Critical Fisher's value (10,10,8) (alpha=0.05) is 3.0. b value is 0.
Since b is less than or equal to 3.0 there is a significant difference between CONTROL and TREATMENT at the 0.05 level.

Fisher's Exact Test

	NUMBER OF		
IDENTIFICATION	ALIVE	DEAD	TOTAL ANIMALS
CONTROL	8	2	10
100.0 %	0	10	10
TOTAL	8	12	20

Critical Fisher's value (10,10,8) (alpha=0.05) is 3.0. b value is 0.
Since b is less than or equal to 3.0 there is a significant difference between CONTROL and TREATMENT at the 0.05 level.

Summary of Fisher's Exact Tests

	NUMBER	NUMBER	SIG

GROUP	IDENTIFICATION	EXPOSED	DEAD	0.05
	CONTROL	10	2	
1	6.25 %	10	3	
2	12.5 %	10	6	
3	25.0 %	10	8	*
4	50.0 %	10	10	*
5	100.0 %	10	10	*

Title: WACKER CERIO CHRONIC - 8/31/99
File: 0830tc5 Transform: NO TRANSFORMATION

Chi-Square Test for Normality

Actual and Expected Frequencies

INTERVAL	<-1.5	-1.5 to <-0.5	-0.5 to 0.5	>0.5 to 1.5	>1.5
EXPECTED	1.2060	4.3560	6.8760	4.3560	1.2060
OBSERVED	0	8	4	6	0

Chi-Square = 7.2838 (p-value = 0.1216)

Critical Chi-Square = 13.277 (alpha = 0.01 , df = 4)
= 9.488 (alpha = 0.05 , df = 4)

Data PASS normality test (alpha = 0.01). Continue analysis.

Title: WACKER CERIO CHRONIC - 8/31/99
File: 0830tc5 Transform: NO TRANSFORMATION

Probit Analysis - not Using Smoothed Proportions

DOSE	NUMBER SUBJECTS	NUMBER OBSERVED	OBSERVED PROPORTION	PREDICTED PROPORTION
6.25	10	3	0.3000	0.3442
12.50	10	6	0.6000	0.5221
25.00	10	8	0.8000	0.8335
50.00	10	10	1.0000	0.9974
100.00	10	10	1.0000	1.0000

Est. Mu = 11.7409 Est. Sigma = 13.6952
sd = 3.4482 sd = 5.3625

Chi-Square lack of fit = 0.4370 Likelihood lack of fit = 0.4632
Table Chi-square = 11.3449 (alpha = 0.01, df = 3)
Table Chi-square = 7.8147 (alpha = 0.05, df = 3)

Title: WACKER CERIO CHRONIC - 8/31/99
File: 0830tc5 Transform: NO TRANSFORMATION

Probit LC Estimates
WITHOUT CONTROL DATA

POINT	EST. END POINT	95% CONFIDENCE LIMITS	
LC 1	-20.1188	-47.2545	7.0169
LC 5	-10.7856	-31.0386	9.4674
LC10	-5.8101	-22.4907	10.8704
LC20	0.2148	-12.3353	12.7648
LC25	2.5037	-8.5798	13.5872
LC30	4.5592	-5.2885	14.4069
LC40	8.2713	0.3419	16.2006
LC50	11.7409	4.9825	18.4994
LC60	15.2105	8.6791	21.7420
LC70	18.9227	11.4975	26.3479
LC75	20.9782	12.6701	29.2862
LC80	23.2671	13.7619	32.7722
LC90	29.2920	16.0262	42.5578
LC95	34.2675	17.5661	50.9688
LC99	43.6006	20.1332	67.0681

Title: WACKER CERIO CHRONIC - REPRODUCTION, 8/31/99
File: 0830TCR Transform: NO TRANSFORMATION

Shapiro - Wilk's Test for Normality

D = 766.8639
W = 0.9437

Critical W = 0.8940 (alpha = 0.01 , N = 27)
W = 0.9230 (alpha = 0.05 , N = 27)

Data PASS normality test (alpha = 0.01). Continue analysis.

Title: WACKER CERIO CHRONIC - REPRODUCTION, 8/31/99
File: 0830TCR Transform: NO TRANSFORMATION

Bartlett's Test for Homogeneity of Variance

Calculated B1 statistic = 11.3305 (p-value = 0.0035)

Data FAIL B1 homogeneity test at 0.01 level. Try another transformation.

Critical B = 9.2103 (alpha = 0.01, df = 2)
= 5.9915 (alpha = 0.05, df = 2)

Using Average Degrees of Freedom
(Based on average replicate size of 9.00)

Calculated B2 statistic = 10.3126 (p-value = 0.0058)

Data FAIL B2 homogeneity test at 0.01 level. Try another transformation.

Title: WACKER CERIO CHRONIC - REPRODUCTION, 8/31/99
File: 0830TCR Transform: NO TRANSFORMATION

Wilcoxon's Rank Sum Test w/ Bonferroni Adjustment Ho: Control<Treatment

GROUP	IDENTIFICATION	MEAN IN ORIGINAL UNITS	RANK SUM	CRIT. VALUE	REPS	SIG 0.05
1	0 CONTROL	15.6250				
2	6.25 %	6.8889	58.50	60	9	*
3	12.5 %	1.7000	56.00	72	10	*

Critical values are 1 tailed (k = 2)

Title: WACKER CERIO CHRONIC - REPRODUCTION, 8/30/99
File: 0830TCI Transform: NO TRANSFORMATION

GRP	IDENTIFICATION	MEAN	SMOOTHED MEAN	CONCENTRATION
1	0 CONTROL	15.6250	15.6250	0.0000
2	6.25 %	6.8889	6.8889	6.2500
3	12.5 %	1.7000	1.7000	12.5000
4	25 %	0.7000	0.7000	25.0000
5	50 %	0.0000	0.0000	50.0000
6	100 %	0.0000	0.0000	100.0000

ICp estimate with p = 25 is < 6.2500

Title: WACKER CERIO ACUTE - 8/30/99
File: 0830tca Transform: NO TRANSFORMATION

Shapiro - Wilk's Test for Normality

******** Shapiro - Wilk's Test is aborted ********

This test can not be performed because total number of replicates is greater than 50.

Total number of replicates = 60

Title: WACKER CERIO ACUTE - 8/30/99
File: 0830TCA Transform: ARC SINE(SQUARE ROOT(Y))

Hartley's Test for Homogeneity of Variance
Bartlett's Test for Homogeneity of Variance

These two tests can not be performed because at least one group has zero variance.

Data FAIL to meet homogeneity of variance assumption.
Additional transformations are useless.

Title: WACKER CERIO ACUTE - 8/30/99
File: 0830TCA Transform: ARC SINE(SQUARE ROOT(Y))

Steel's Many-One Rank Test - Ho: Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	RANK SUM	CRIT. VALUE	DF	SIG 0.05
1	0 CONTROL	1.0472				
2	6.25 %	1.0472	105.00	75.00	10.00	
3	12.5 %	1.0472	105.00	75.00	10.00	
4	25 %	0.8378	85.00	75.00	10.00	
5	50 %	0.9425	95.00	75.00	10.00	
6	100 %	0.8378	85.00	75.00	10.00	

Critical values are 1 tailed (k = 5)

APPENDIX B

REFERENCE TOXICANT DATA SHEETS

COFFEY LABORATORIES, INC.
12423 N.E. Whitaker Way • Portland, OR • 97230 • (503) 254-1794 • FAX (503) 254-1452

Title: FATHEAD MINNOW CHRONIC REF. TOX. - 8/10/99
File: augreff5 Transform: NO TRANSFORMATION

Chi-Square Test for Normality

Actual and Expected Frequencies

INTERVAL	<-1.5	-1.5 to <-0.5	-0.5 to 0.5	>0.5 to 1.5	>1.5
EXPECTED	1.2060	4.3560	6.8760	4.3560	1.2060
OBSERVED	0	8	3	7	0

Chi-Square = 9.2501 (p-value = 0.0551)

Critical Chi-Square = 13.277 (alpha = 0.01 , df = 4)
= 9.488 (alpha = 0.05 , df = 4)

Data PASS normality test (alpha = 0.01). Continue analysis.

Title: FATHEAD MINNOW CHRONIC REF. TOX. - 8/10/99
File: augreff5 Transform: NO TRANSFORMATION

Probit Analysis - not Using Smoothed Proportions

DOSE	NUMBER SUBJECTS	NUMBER OBSERVED	OBSERVED PROPORTION	PREDICTED PROPORTION
1.00	40	2	0.0500	0.0398
2.50	40	9	0.2250	0.2061
4.00	40	19	0.4750	0.5448
5.50	40	35	0.8750	0.8520
8.00	40	40	1.0000	0.9953

Est. Mu = 3.8190 Est. Sigma = 1.6085
sd = 0.1910 sd = 0.1987

Chi-Square lack of fit = 1.3365 Likelihood lack of fit = 1.5174
Table Chi-square = 11.3449 (alpha = 0.01, df = 3)
Table Chi-square = 7.8147 (alpha = 0.05, df = 3)

Title: FATHEAD MINNOW CHRONIC REF. TOX. - 8/10/99
File: augreff5 Transform: NO TRANSFORMATION

Probit LC Estimates
WITHOUT CONTROL DATA

POINT	EST. END POINT	95% CONFIDENCE LIMITS	
LC 1	0.0772	-0.8691	1.0234
LC 5	1.1733	0.4633	1.8833
LC10	1.7577	1.1635	2.3519
LC20	2.4653	1.9922	2.9384
LC25	2.7341	2.2981	3.1701
LC30	2.9755	2.5668	3.3843
LC40	3.4115	3.0337	3.7894
LC50	3.8190	3.4446	4.1934
LC60	4.2265	3.8302	4.6229
LC70	4.6625	4.2189	5.1061
LC75	4.9039	4.4261	5.3817
LC80	5.1727	4.6517	5.6938
LC90	5.8804	5.2279	6.5328
LC95	6.4647	5.6919	7.2375
LC99	7.5609	6.5474	8.5743

Title: FATHEAD MINNOW CHRONIC REF. TOX. - 8/10/99
File: augreff5 Transform: NO TRANSFORMATION

Chi-Square Test for Normality

Actual and Expected Frequencies

INTERVAL	<-1.5	-1.5 to <-0.5	-0.5 to 0.5	>0.5 to 1.5	>1.5

Title: FHM CHRONIC REF. TOX. - GROWTH, 8/10/99
File: augreffi Transform: NO TRANSFORMATION

GRP	IDENTIFICATION	MEAN	SMOOTHED MEAN	CONCENTRATION
1	0 CONTROL	0.5065	0.5380	0.0000
2	1.0 g/L	0.5695	0.5380	1.0000
3	2.5 g/L	0.1393	0.1393	2.5000
4	4.0 g/L	0.0702	0.0702	4.0000
5	5.5 g/L	0.0172	0.0172	5.5000
6	8.0 g/L	0.0000	0.0000	8.0000

ICp estimate with p = 25 is 1.5060

Bootstrap results using 480 iterations:

Mean = 1.5057 Standard Deviation = 0.0163
95% Confidence Interval: (1.4698 , 1.5349)
Adjusted Interval: (1.4482 , 1.5522)

Title: FATHEAD MINNOW 96 HOUR ACUTE REF. TOX. - 8/10/99.
File: augreffp Transform: NO TRANSFORMATION

Chi-Square Test for Normality

Actual and Expected Frequencies

INTERVAL	<-1.5	-1.5 to <-0.5	-0.5 to 0.5	>0.5 to 1.5	>1.5
EXPECTED	1.2060	4.3560	6.8760	4.3560	1.2060
OBSERVED	0	10	1	7	0

Chi-Square = 16.3511 (p-value = 0.0026)

Critical Chi-Square = 13.277 (alpha = 0.01 , df = 4)
= 9.488 (alpha = 0.05 , df = 4)

Data FAIL normality test (alpha = 0.01). Try another transformation.

Warning - The first three homogeneity tests are sensitive to non-normality and should not be performed with this data as is.

Title: FATHEAD MINNOW 96 HOUR ACUTE REF. TOX. - 8/10/99.
File: augreffp Transform: NO TRANSFORMATION

Trimmed Spearman - Karber		Estimate	VAR	95% C.I.	UNCONDITIONAL 95% C.I.
	10.00%	5.0677	0.0387	(4.68, 5.45)	(4.67, 5.46)
	20.00%	5.0013	0.0336	(4.64, 5.36)	(4.63, 5.37)
HIGH CALC	5.00%	5.0394	0.0395	(4.65, 5.43)	(4.64, 5.44)
LOW CALC	5.00%	5.0394	0.0395	(4.65, 5.43)	(4.64, 5.44)

GROUP	IDENTIFICATION	OBS PROP	SMOOTH PROP	DOSES
1	0 CONTROL	0.0000	0.0000	0.0000
2	1.0 g/L	0.0500	0.0500	1.0000
3	2.5 g/L	0.0750	0.0750	2.5000
4	4.0 g/L	0.1500	0.1500	4.0000
5	5.5 g/L	0.7000	0.7000	5.5000
6	8.0 g/L	1.0000	1.0000	8.0000

Title: CERIODAPHNIA CHRONIC REF. TOX. - SURVIVAL, 9/1/99
File: augrefc5 Transform: NO TRANSFORMATION

Probit Analysis - not Using Smoothed Proportions

DOSE	NUMBER SUBJECTS	NUMBER OBSERVED	OBSERVED PROPORTION	PREDICTED PROPORTION
0.50	10	0	0.0000	0.0159
1.00	10	3	0.3000	0.1735
1.50	10	4	0.4000	0.6052
2.00	10	10	1.0000	0.9298
3.00	10	10	1.0000	0.9999

Est. Mu = 1.3895 Est. Sigma = 0.4141
sd = 0.1083 sd = 0.1103

Chi-Square lack of fit = 3.7955 Likelihood lack of fit = 4.4471
Table Chi-square = 11.3449 (alpha = 0.01, df = 3)
Table Chi-square = 7.8147 (alpha = 0.05, df = 3)

Title: CERIODAPHNIA CHRONIC REF. TOX. - SURVIVAL, 9/1/99
File: augrefc5 Transform: NO TRANSFORMATION

Probit LC Estimates
WITHOUT CONTROL DATA

POINT	EST. END POINT	95% CONFIDENCE LIMITS	
LC 1	0.4260	-0.0993	0.9513
LC 5	0.7082	0.3133	1.1032
LC10	0.8587	0.5274	1.1900
LC20	1.0409	0.7759	1.3059
LC25	1.1101	0.8652	1.3550
LC30	1.1723	0.9421	1.4025
LC40	1.2845	1.0708	1.4983
LC50	1.3895	1.1772	1.6018
LC60	1.4944	1.2698	1.7190
LC70	1.6066	1.3560	1.8573
LC75	1.6688	1.3992	1.9383
LC80	1.7380	1.4447	2.0314
LC90	1.9202	1.5544	2.2860
LC95	2.0707	1.6384	2.5030
LC99	2.3529	1.7875	2.9183

Title: CERIODAPHNIA CHRONIC REF. TOX. - REPRODUCTION, 9/1/99
File: augrefci Transform: NO TRANSFORMATION

GRP	IDENTIFICATION	MEAN	SMOOTHED MEAN	CONCENTRATION
1	0 CONTROL	17.0000	17.0000	0.0000
2	0.5 g/L	15.7778	15.7778	0.5000
3	1.0 g/L	1.4000	1.8421	1.0000
4	1.5 g/L	2.3333	1.8421	1.5000

5	2.0 g/L	0.0000	0.0000	2.0000
6	3.0 g/L	0.0000	0.0000	3.0000

ICp estimate with p = 25 is 0.6086

Bootstrap estimate did not exist for 93 iterations.
Bootstrap results using 387 iterations:

Mean = 0.6098 Standard Deviation = 0.0409
95% Confidence Interval: (0.5125 , 0.6520)

Title: CERIODAPHNIA 48-HR ACUTE, REFTOX - 9/1/99
File: augrefca Transform: ARC SINE(SQUARE ROOT(Y))

Shapiro - Wilk's Test for Normality

******** Shapiro - Wilk's Test is aborted ********

This test can not be performed because total number of replicates is greater than 50.

Total number of replicates = 60

Title: CERIODAPHNIA 48-HR ACUTE, REFTOX - 9/1/99
File: augrefca Transform: NO TRANSFORMATION

GRP	IDENTIFICATION	MEAN	SMOOTHED MEAN	CONCENTRATION
1	0 CONTROL	1.0000	1.0000	0.0000
2	0.5 g/L	1.0000	1.0000	0.5000
3	1.0 g/L	1.0000	1.0000	1.0000
4	1.5 g/L	1.0000	1.0000	1.5000
5	2.0 g/L	0.0000	0.0000	2.0000
6	3.0 g/L	0.0000	0.0000	3.0000

ICp estimate with p = 50 is 1.7500

Bootstrap results using 480 iterations:

Mean = 1.7500 Standard Deviation = 0.0000
95% Confidence Interval: (1.7500 , 1.7500)

APPENDIX C

CHAINS-OF-CUSTODY

COFFEY LABORATORIES, INC.
12423 N.E. Whitaker Way • Portland, OR • 97230 • (503) 254-1794 • FAX (503) 254-1452

COFFEY LABORATORIES, INC.
CHAIN OF CUSTODY AGREEMENT

CENTRAL OREGON BRANCH
827 SW 7th
Redmond, OR 97756
PHONE/FAX (541) 548-0972

CORPORATE HEADQUARTERS
12423 NE Whitaker Way
Portland, OR 97230
(503) 254-1794 FAX: (503) 254-1452

EASTERN OREGON BRANCH
419 SW 5th
Pendleton, OR 97801
PHONE/FAX (541) 276-0385

Report Attention: Thomas J. Rothschild
Company Name: Wacker Siltronic Corp.
Mailing Address: 7200 N.W. Front Avenue
Portland, Oregon 97210
Phone: (503) 243-2020 FAX: (503) 417-4144

Report Instructions (Special - Additional- Job Specific):

PO Number: 429059
Project Number:
Project Name: Aquatic Toxicity
EPA Protocol Containers: (Y)N Other:

Sample Turnaround
- [x] Standard
- [ ] Priority (Additonal Fee)
- [ ] Rush (Additional Fee)
- [ ] Emergency (Additional Fee)

Initials:

Reporting Request
- [x] State Compliance Format
- [ ] FAX Results - Preliminary
- [ ] FAX Results-Final
- [ ] Verbals Results
- [ ] Extra Report Copy (Fees Associated)

FOR LABORATORY USE ONLY Page ___ of ___
Job Number: MX-[illegible] T - 75
Custabbr: [illegible] ☐NEW
☐ VISA ☐ M/C Cardholder:
Card #: Exp: / /
Cash / Check / CC:$ #:
Billing Code: 1 2 3 4
QC LEVEL: 1 2 3 4
FEDX BUS COURIERS UPS LAB CLIENT MAIL AIR

Sample ID	Loc.	ID	#	Collection Date	Collection Time	Media	Analysis Requested	Test/ Profile
99-85		1f		30 Aug 1999	0800	water	Bioassay	
		1j						
		1r						
	B1	K						

Sampled By: Thomas J. Rothschild / Dianne Mullen
AUTHORIZED CUSTOMER SIGNATURE
DATE:

Sample Comments	Relinquished by: (Please Sign)	Date	Time	Received by: (Sign)	Date	Time
	Thomas J. Rothschild	30 Aug 99	1039	[illegible]	8/30/99	1039
				LAB [illegible]	[illegible]	132[illegible]

White Copy-Laboratory Yellow Copy - Customer

COMPLETE THIS FORM PER INSTRUCTIONS ON REVERSE SIDE

SUBMISSION OF SAMPLES WITH TESTING REQUIREMENTS TO CLI WILL BE UNDERSTOOD TO BE AN AGREEMENT FOR SERVICES IN ACCORDANCE WITH THE CONDITIONS LISTED ON THE BACK OF THE CLIENT COPY.

SCOEPA00018987

COFFEY LABORATORIES, INC.
CHAIN OF CUSTODY AGREEMENT

CENTRAL OREGON BRANCH
827 SW 7th
Redmond, OR 97756
PHONE/FAX (541) 548-0972

CORPORATE HEADQUARTERS
12423 NE Whitaker Way
Portland, OR 97230
(503) 254-1794 FAX: (503) 254-1452

EASTERN OREGON BRANCH
419 SW 5th
Pendleton, OR 97801
PHONE/FAX (541) 276-0385

Report Attention: Thomas J Rothschild
Company Name: Wacker Siltronic Corporation
Mailing Address: 7200 N.W. Front Avenue
Portland, Oregon 97210
Phone: (503) 243-2020 FAX: (503) 417-4144

Report Instructions (Special - Additional- Job Specific):

PO Number: 429059
Project Number: 99-86
Project Name: –
EPA Protocol Containers: Y/N Other:

Sample Turnaround
- [x] Standard
- [ ] Priority (Additonal Fee)
- [ ] Rush (Additional Fee)
- [ ] Emergency (Additional Fee)

Reporting Request
- [ ] State Compliance Format
- [ ] FAX Results - Preliminary
- [ ] FAX Results-Final
- [ ] Verbals Results
- [ ] Extra Report Copy (Fees Associated)

Initials:

FOR LABORATORY USE ONLY Page ____ of ____
Job Number: MX99086 OT
Custabbr: Wacker ☐NEW
☐ VISA ☐ M/C Cardholder:
Card #: Exp: / /
Cash / Check / CC:$ #:
Billing Code: 1 2 3 4
QC LEVEL: 1 2 3 4
FEDX BUS COURIERS UPS LAB CLIENT MAIL AIR

Sample ID	Loc.	ID	#	Collection Date	Time	Media	Analysis Requested	Test/ Profile
99-86		3f		1 Sep 1999	0800	water	Bioassay	
		2j						
		2r						
	B1	2X						

Sampled By: Dianne Mullen / Thomas J. Rothschild
AUTHORIZED CUSTOMER SIGNATURE DATE:

Sample Comments	Relinquished by: (Please Sign)	Date	Time	Received by: (Sign)	Date	Time
	Thomas J. Rothschild	1 Sep 99		[signature]	9-1-99	1245
				LAB [signature]	9/1/99	14:40

White Copy-Laboratory Yellow Copy - Customer

COMPLETE THIS FORM PER INSTRUCTIONS ON REVERSE SIDE

SUBMISSION OF SAMPLES WITH TESTING REQUIREMENTS TO CLI WILL BE UNDERSTOOD TO BE AN AGREEMENT FOR SERVICES IN ACCORDANCE WITH THE CONDITIONS LISTED ON THE BACK OF THE CLIENT COPY.

SCOEPA00018988

COFFEY LABORATORIES, INC.
CHAIN OF CUSTODY AGREEMENT

CENTRAL OREGON BRANCH
827 SW 7th
Redmond, OR 97756
PHONE/FAX (541) 548-0972

CORPORATE HEADQUARTERS
12423 NE Whitaker Way
Portland, OR 97230
(503) 254-1794 FAX: (503) 254-1452

EASTERN OREGON BRANCH
419 SW 5th
Pendleton, OR 97801
PHONE/FAX (541) 276-0385

Report Attention: Thomas J. Rothschild
Company Name: Wacker Siltronic Corporation
Mailing Address: 7200 N.W. Front Avenue
Portland, Oregon 97219
Phone: (503) 243-2020 FAX: (503) 417-4144

Report Instructions (Special - Additional- Job Specific):

PO Number: 429059
Project Number: 99-90
Project Name: —
EPA Protocol Containers: (Y)N Other:

Sample Turnaround
- [x] Standard
- [ ] Priority (Additonal Fee)
- [ ] Rush (Additional Fee)
- [ ] Emergency (Additional Fee)

Reporting Request
- [ ] State Compliance Format
- [ ] FAX Results - Preliminary
- [ ] FAX Results-Final
- [ ] Verbals Results
- [ ] Extra Report Copy (Fees Associated)

Initials:

FOR LABORATORY USE ONLY Page ___ of ___
Job Number: MX 9908 3001 — 3
Custabbr: cwkerslt ☐NEW

☐ VISA ☐ M/C Cardholder:
Card #: Exp: / /
Cash / Check / CC:$ #:
Billing Code: 1 2 3 4
QC LEVEL: 1 2 3 4
FEDX BUS COURIERS UPS LAB CLIENT MAIL AIR

Sample ID	Loc.	ID	#	Collection Date	Collection Time	Media	Analysis Requested	Test/ Profile
99-90	55	3r		3 Sep 1999	0745	water	Bioassay	
	B4	3f						
	047	3j						
	B1	3k						

Sampled By: Dianne Mullan/Thomas J. Rothschild
AUTHORIZED CUSTOMER SIGNATURE
DATE:

Sample Comments	Relinquished by: (Please Sign)	Date	Time	Received by: (Sign)	Date	Time
	Thomas J. Rothschild	3Sep99		[signature]	9/3/99	1045
				LAB [signature]	11/3/99	1150

White Copy-Laboratory Yellow Copy - Customer

COMPLETE THIS FORM PER INSTRUCTIONS ON REVERSE SIDE

SUBMISSION OF SAMPLES WITH TESTING REQUIREMENTS TO CLI WILL BE UNDERSTOOD TO BE AN AGREEMENT FOR SERVICES IN ACCORDANCE WITH THE CONDITIONS LISTED ON THE BACK OF THE CLIENT COPY.

SCOEPA00018989

APPENDIX D

ORGANISM HISTORY

COFFEY LABORATORIES, INC.
12423 N.E. Whitaker Way • Portland, OR • 97230 • (503) 254-1794 • FAX (503) 254-1452

1300 Blue Spruce Drive, Suite C
Fort Collins, Colorado 80524

AQUATIC BIO SYSTEMS ABS INC.

Toll Free: 800/331-5916
Tel: 970/484-5091 Fax: 970/484-2514

ORGANISM HISTORY

DATE: 8/30/99

SPECIES: Pimephales promelas

AGE: N/A

LIFE STAGE: Embryo

HATCH DATE: 8/30/99

BEGAN FEEDING: N/A

FOOD: N/A

Water Chemistry Record:	Mean	Range
TEMPERATURE:	25 °C	--
SALINITY / CONDUCTIVITY:	--	--
TOTAL HARDNESS (as $CaCO_3$):	120 mg/l	--
TOTAL ALKALINITY (as $CaCO_3$):	85 mg/l	--
pH:	8.11	--

Comments:

Elizabeth Olson

Facility Supervisor

SCOEPA00018991

Wacker Siltronic Corporation

WACKER

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180
Phone (503) 243-2020
FAX (503) 241-7598
TDD (503) 241-7519

January 4, 1994

SER 35:CB

Mr. George Davis
Environmental Consultant
Northwest Region
Department of Environmental Quality
1500 S.W. First Avenue, Suite 750
Portland, Oregon 97201-5884

Dear Mr. Davis:

Enclosed is information concerning hexavalent chromium treatment at Wacker. As demonstrated during your inspection on December 1, all hexavalent chromium in the facility is treated at the chrome pretreatment facility before being transferred to the CAD system to be treated for fluorides. Enclosed are copies of the analytical data for the two batches of material treated during the month of October. Both batches were treated to within permit limits before being transferred to the CAD system. After transfer the treated material is diluted at least 40 times before entering the combined effluent.

As discussed with you, the average of 0.03 ppm reported for the combined effluent appears to be erroneous because there was no hexavalent chromium entering the effluent except that which was treated at the pretreatment facility. Analytical data showing no detectable hexavalent chromium in the influent to the WAD and CAD is also enclosed.

If you have any questions, please contact Chip Bloomer at (503) 243-2020 ext 132.

Very truly yours,

WACKER SILTRONIC CORPORATION

Thomas C. McCue

Thomas C. McCue
Environmental Manager

Enclosures (2)

cc: John Pittman
Tom Rothschild

PACIFIC ENVIRONMENTAL LABORATORY INC.

9405 S.W. Nimbus Ave.
Beaverton, OR 97005
(503) 644- 0660
Fax (503) 644-2202

CHAIN OF CUSTODY RECORD

COMPANY Wacker Siltronic Corporation PROJECT NAME – LAB PROJECT NUMBER 933625

PROJECT MANAGER – PROJECT NUMBER –

COLLECTED BY Thomas J. Rothschild P.O. NUMBER 30381 RUSH ☐ YES ☒ NO

COMMENTS

SAMPLES RECEIVED AT 4°C ☒ YES ☐ NO

SAMPLES IN APPROPRIATE CONTAINERS ☒ YES ☐ NO

PROVIDE VERBAL RESULTS ☐ YES ☒ NO

PROVIDE PRELIMINARY FAX RESULTS ☒ YES ☐ NO

PROVIDE FINAL FAX RESULTS ☐ YES ☒ NO

PEL NO	SAMPLE ID	DATE	TIME	SAMPLE DESCRIPTION	MATRIX: SOIL	MATRIX: WATER	MATRIX: OTHER	NUMBER OF CONTAINERS	TPH - HCID OAR/DEQ	TPH - Gasoline OAR/DEQ	TPH - Diesel OAR/DEQ	TPH - 418.1 Modified OAR/DEQ	HCID - Fuel Scan GC/FID	TPH 418.1	BTEX 602/8020	Halogenated Volatiles 601/8010	Volatiles 624/8240	Semivolatiles 625/8270	PCB's 608/8080	Chlorinated Pesticides 608/8080	TCLP (8) Metals	Chrome Total		Chrome +6		As, Cd, Cr, Zn	REMARKS
	93-90	15 Dec 93	0930	CAD Influent		X		1														X		X			
	93-91	15 Dec 93	0930	WAD 1st Infl.		X		1														X		X			
	93-92	15 Dec 93	0750	OWW Composite		X		1																		X	

RELINQUISHED BY	COMPANY	DATE/TIME	RECEIVED BY	COMPANY
Thomas J. Rothschild	Wacker Siltronic Corporation	15 Dec 93/1000	[illegible]	WACKER
[illegible]	WACKER	12-15-93/1337	Julie Reynolds	PEL 12-15-93/1337
RELINQUISHED B	COMPANY	DATE/TIME	RECEIVED BY	COMPANY

SCOEPA00018993

PACIFIC
ENVIRONMENTAL
LABORATORY INC.

REC'D DEC 23 1993
3 8 R

December 22, 1993

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Thomas J. Rothschild

RE: JOB #
P.O.# 30381
PROJECT -

Enclosed are test results for your samples received in this lab on Dec. 15, 1993. For your reference, these analyses have been assigned our PEL # 93-3625.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

Please call if you have any questions.

Respectfully,

Howard Holmes
Project Manager

Rob May
Project Manager

9405 S.W. Nimbus Ave. ■ Beaverton, OR 97005 ■ (503) 644-0660 ■ FAX # (503) 644-2202

PACIFIC ENVIRONMENTAL LABORATORY INC.

Hexavalent Chromium per EPA 7195
Results In mg/L (ppm)

Client: Wacker Siltronic Corporation
Project:
Received: 12/15/1993

PEL Number: 93-3625
Matrix: water

*Flyent	Sample Name	Analyte	Result	MRL	Date Prepped	Date Analyzed
-AD	93-90	Hexavalent Chromium	ND	0.020	12/16/93	12/16/93
VAD	93-91	Hexavalent Chromium	ND	0.020	12/16/93	12/16/93
	Method Blank	Hexavalent Chromium	ND	0.020		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

9405 S.W. Nimbus Ave. ■ Beaverton, OR 97005 ■ (503) 644-0660 ■ FAX # (503) 644-2202

PACIFIC
ENVIRONMENTAL
LABORATORY INC.

Total Metals per EPA 200.7
Results In mg/L (ppm)

Client: Wacker Siltronic Corporation
Project:
Received: 12/15/1993

PEL Number: 93-3625
Matrix: water

Sample Name	Analyte	Result	MRL	Date Prepped	Date Analyzed
93-90	Chromium	ND	0.020	12/16/93	12/21/93
93-91	Chromium	ND	0.020	12/16/93	12/21/93
Method Blank	Chromium	ND	0.020		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

9405 S.W. Nimbus Ave. ■ Beaverton, OR 97005 ■ (503) 644-0660 ■ FAX # (503) 644-2202

PACIFIC
ENVIRONMENTAL
LABORATORY INC.

Total Metals per EPA 200 series
Results In mg/L (ppm)

Client: Wacker Siltronic Corporation
Project:
Received: 12/15/1993

PEL Number: 93-3625
Matrix: water

Sample Name	Analyte	Result	MRL	Date Prepped	Date Analyzed
93-92	Arsenic	ND	0.0080	12/16/93	12/22/93
	Cadmium	0.00041	0.00025		
	Chromium	ND	0.020		
	Zinc	ND	0.10		
Method Blank	Arsenic	ND	0.0040		
	Cadmium	ND	0.00025		
	Chromium	ND	0.020		
	Zinc	ND	0.10		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

9405 S.W. Nimbus Ave. ■ Beaverton, OR 97005 ■ (503) 644-0660 ■ FAX # (503) 644-2202

Tom -

Wacker Siltronic Corporation

WACKER

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180
Phone (503) 243-2020
FAX (503) 241-7598
TDD (503) 241-7519

December 10, 1993

SER 032:CB

Attn: Quality Assurance Chemist
Department of Environmental Quality
1712 SW 11th Avenue
Portland, Oregon 97201

Dear Chemist:

Enclosed are the completed source sample results of the inter-laboratory split comparison to be compared with analytical results for samples taken by George Davis, of the Department of Environmental Quality, at Wacker Siltronic Corporation on December 1, 1993.

If you have any questions concerning this matter, please contact Chip Bloomer at (503) 241-7532 ext 132.

Very truly yours,

WACKER SILTRONIC CORPORATION

Thomas C McCue

Thomas C. McCue
Environmental Manager

enclosure:
(1) Inter-Laboratory Split Comparison

cc: Tom Rothschild

OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY

Inter-Laboratory Split Comparison DEQ Case Number: _____

Source Name: Wacker Siltronic Corporation
Contact Person: Thomas J. Rothschild
Address: 7200 NW Front Avenue
Collected By: GEORGE DAVIS

Sample Date: 1 December 1993
Phone: 243-2020 Ext. 374

Region/Division: NWR

Analysis ♠	FIELD MEASUREMENTS♣ Sample A	Sample B	Sample C	SOURCE SAMPLE RESULTS Sample mg/L A	Sample B	Sample C	Sample D	Date/Time Analysis set up	DEQ LAB RESULTS Sample A	Sample B	Sample C	Sample D	Date/Time Analysis set up
BOD-5				3.7				1 Dec 93 0800 - 1400					
TSS				11.5									
Cr_T				0.04									
Cr(VI)				0.01									
F				3.5									
PO_4 (T)				0.7									

Sample	Sample point description ♠ (ie. Effluent comp.).	Container number SOURCE	DEQ ♠
A	Combined Effluent Comp.		
B			
C			
D			

Fill in your split sample results and mail to:

DEQ Lab
1712 SW 11th Ave.
Portland, OR 97201
Attn: QA Chemist

Shaded area for DEQ use.
♣DEQ sampler enter your field measurements, if taken; indicate whether they are estimates.
♠DEQ sampler is responsible for completing this column.

Need assistance with this form? Contact the QA chemist at (503) 229-5983.

SCOEPA00018999

WEEKLY FACILITIES ANALYSES

WEEK ENDING: 6-24-88

TEST	SAMPLE: OWW	MV-3	WWPT EFF	COMB OUTFALL	DEQ Split
1. BOD (mg/l)			42 *		4.0
2. TSS (mg/l)			8 *		6.0
3. FLUORIDE (mg/l)	3.95 #		4.65 *		4.9
4. TOTAL PHOSPHATES (mg/l)		No Sample	*(0.3)		0.13
5. CHROMIUM IV (mg/l)			0.010 *		<0.002
6. CHROMIUM TOTAL (mg/l)			0.017 *		<0.002
7. TCE (mg/l)	0.04 #		– *		0.004
8. TEMPERATURE (C)				22 *	
9. BACTERIOLOGY (COLONIES/L)					

HOUSE RODI 101 POLISHING RODI 1 SPECIAL RODI 1

14 Sep 88
3yr2

COMMENTS: Sample's send to Agua Tech.
TCE DEQ split on PWW = 0.02

NOTES: # DISCHARGE PERMIT CITY OF PORTLAND
* DISCHARGE PERMIT DEPARTMENT OF ENVIRONMENTAL QAULITY
mg/l = ppm

COPIES TO: ENVIRONMENTAL MANAGER/MURRAY TILSON
ENVIRONMENTAL ENGINEER/GREG CARR
FACILITIES OPERATION SUPERVISOR/MIKE PILKINGTON

TJR 5-13-87
TJR 4-13-88 Rev

DEPARTMENT OF ENVIRONMENTAL QUALITY
LABORATORY DATA SHEET

Site: WACKER SILTRONICS
Collected By: SYLVESTER (NWR)
Date Collected: 5/6/87

Page 1

Laboratory No: 87-0375
Program Code: 3256 I
Analysis Completed:

Compared 5/6/87

Item #	Sampling Point	Test Results (All Units in mg/l or ug/m³)											
		POLYS	POLYS T-Cr	POLY Cr(VI)	BOD5	TSS	pH	F⁻	TPO4-P	TOTAL Cr	Chrome (VI)		
1	STP	STP 212 R902	DP1035 TM2664	TM2672	2	11	7.0						
2	METER VOLT 3	STP 200 R959	DP965 TM2662	TM 2671	<1	<1	7.0						
3	COMBINED OUTFALL	STP 200 R645	DP 1013 TM2661	TM 2675	6	12	7.7	3.2	0.50	<0.002	<0.002		
4	MV3 (5-15-87)	R153							0.36				
5													
6	Composite (STP)				2.3	10.3	x	4.6	x	≤.004	≤.002		
7	MV 3				x	x	5.7		0.7				
8	Combined Outfall				X	X	7.4	X	x	X	X		
9	MV3 (5-15-87)								0.05				
10													
11					WRONG ANALYSES REQUESTED								
12													
13													
14													
15													
16													

AVI

Comments: Please send source's split results to Brace Gilles - LAB.

SCOEPA00019001

WACKER
Wacker Siltronic Corporati

January 6, 1997 ER:001

Mr. Timothy P. Dean
Permit Manager
Environmental Tech. II
City of Portland
Environmental Services
1211 SW 5th Avenue, Suite 800
Portland, OR 97204-3713

RE: Waste Water Discharge due to Power Outage

Dear Mr. Dean:

Wacker Siltronic reported an overflow of untreated waste water to the sanitary sewer on December 25 and 26, 1996. Both of these overflows were the result of power failures, however, we believe they were unrelated.

The first overflow was an upset condition which lasted 10 minutes and occurred at 12:15 am 12/25/96 due to an air handling unit going to ground which caused a power failure in the motor control center (MCC4C) which feeds the forwarding sump pumps. The forwarding pumps transfer waste water from Fab 1 to the waste water treatment plant. A failure of these pumps will cause the sump to reach high level and overflow to the sanitary drain. An over flow of approximately 1,000 gallons of waste waster was sent to the sanitary sewer and was reported to the Duty Officer at the Columbia Boulevard Treatment Plant. All waste water discharged met permit parameters.

The second overflow was an upset condition where all power was to the plant from 10:45-11:39 am, 12/26/96. Power was lost due to severe weather conditions. Wacker Siltronic is supplied with two power feeds into an onsite substation. Power was lost from both feeds and it is still not known how this could have happened. A report is due from the utility.

Wacker has uninterruptable power supply for alarm systems, life safety systems, and critical control systems. In addition, we have emergency generators which supply power to key pollution control equipment like emergency exhaust fans. When the power went down water supply to the processes stopped limiting the amount of waste water which would be produced. City drinking water was automatically fed to the furnaces as Emergency cooling water to prevent meltdown. This cooling water drains to the waste water forwarding sump WAD system which in turn overflows to the OWW and finally to the sanitary sewer.

The power outage lasted 54 minutes. The over flow to the sanitary sewer was estimated to last approximately 30 minutes at 200 gpm or 6,000 gals. An overflow of 18,000 gallons was reported to Miguel Santana, BES 12/26/96. Since power was out to the recorder only the last 10 minutes of the outage was recorded until the system came back under control. Available head space and holding capacity in the WAD and OWW forwarding sumps reduced the actual overflow time. Additional confusion occurred when we discovered we have the wrong strip chart paper in the strip chart recorder. The chart paper reads 0-600 full scale and the flow monitoring device is calibrated for 0-200 gpm. Grab samples for pH and fluoride were taken and analyzed during the over flow. pH was 6.87 and Fluoride was 0.35 mg/l. All permit parameters were met during the upset except that we were unable to past all waste water through the water treatment plant. Should you have any addition questions, please call me at 241-7532.

Sincerely,

Thomas C. McCue

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180
Phone (503) 243-2020
TDD (503) 241-7519

An ISO 9001 Certified Corporation

Author: Justin Darr at WSC-PORTLAND
Date: 12/26/96 7:45 AM
Priority: Normal
TO: Tom McCue
TO: Jeffrey Norris
Subject: Re: Incident Report

---------- Message Contents ----------

A good report Jeff. I think you handled the situation very well.

Justin

_____ Reply Separator _____

Subject: Incident Report
Author: Jeffrey Norris at WSC-PORTLAND
Date: 12/25/96 4:41 AM

On 12/25/96, at approximately 00:15, Panel MCC4A tripped off. It was later found to be caused by the Pomona unit's motor grounding out and tripping the panel.

This panel controls all the Fab 1 forwarding sumps, west vacuum pumps and the East & West Pomona Air AC units (computer room). All lost power due to the failure.

Security was called, Ed Anderson responded along with Dan Dunn (growing maintenance) to assist Lou Pascavage and myself (Jeff Norris) in finding the problem.

Ed & Lou found the reset for Panel MCC4A at Panel SB4 (located right across from the other panel). After resetting, the above mentioned equipment returned to normal service, except for the West Pomona Air AC Unit.

The Fab 1 WAD forwarding sump overflowed to the OWW forwarding sump, which overflowed to the sanitary sewer overflow. This overflow occurred for approximately 10 minutes with a peak flow reaching ~~500gpm~~. 166 gpm

The on-call maintenance personnel (Tom Labrado & Olum) were called in to fix the problem. They later found that the Panel was tripped by the West Pomona Air AC unit. Apparently there has been a problem with this unit blowing fuses lately and this time it grounded out, taking the panel with it.

Justin Darr was contacted as well as Tom McCue to notify them of the situation. Tom McCue suggested we call the Columbia Blvd. WWTP to notify them of the situation. This was done shortly thereafter.

A quick response by the personnel involved and teamwork helped to eliminate what could have been a major problem.

Listed below is an account of what Security recorded as things occurred:

0030 R11 requests Security's assistance/Ed Anderson responding
0033 Facility Operators through Anderson requests Fac. Maint. be called (electrician) for power outage.
0034 Olum Philavanh notified
0035 Called Tom Labrado, left message
0036 Paged Tom Labrado
0037 Tom Labrado returned the call
0040 R15 requests call Justin Darr
0042 Called Justin Darr to come in
0045 Don Crane notified
0047 D119 75 degrees
0048 Norris requests Yarby (electrician) to come in per Justin Darr
0050 Power restored, Norris requests Yarby not be called
0051 Called Darr to stand-by until further notice
0051 Jerry Hogkinson notified
0055 Called Ann Schowelter, left message

Author: Justin Darr at WSC-PORTLAND
Date: 12/27/96 1:46 PM
Priority: Normal
TO: Tom McCue
Subject: Overflow

---------- Message Contents ----------

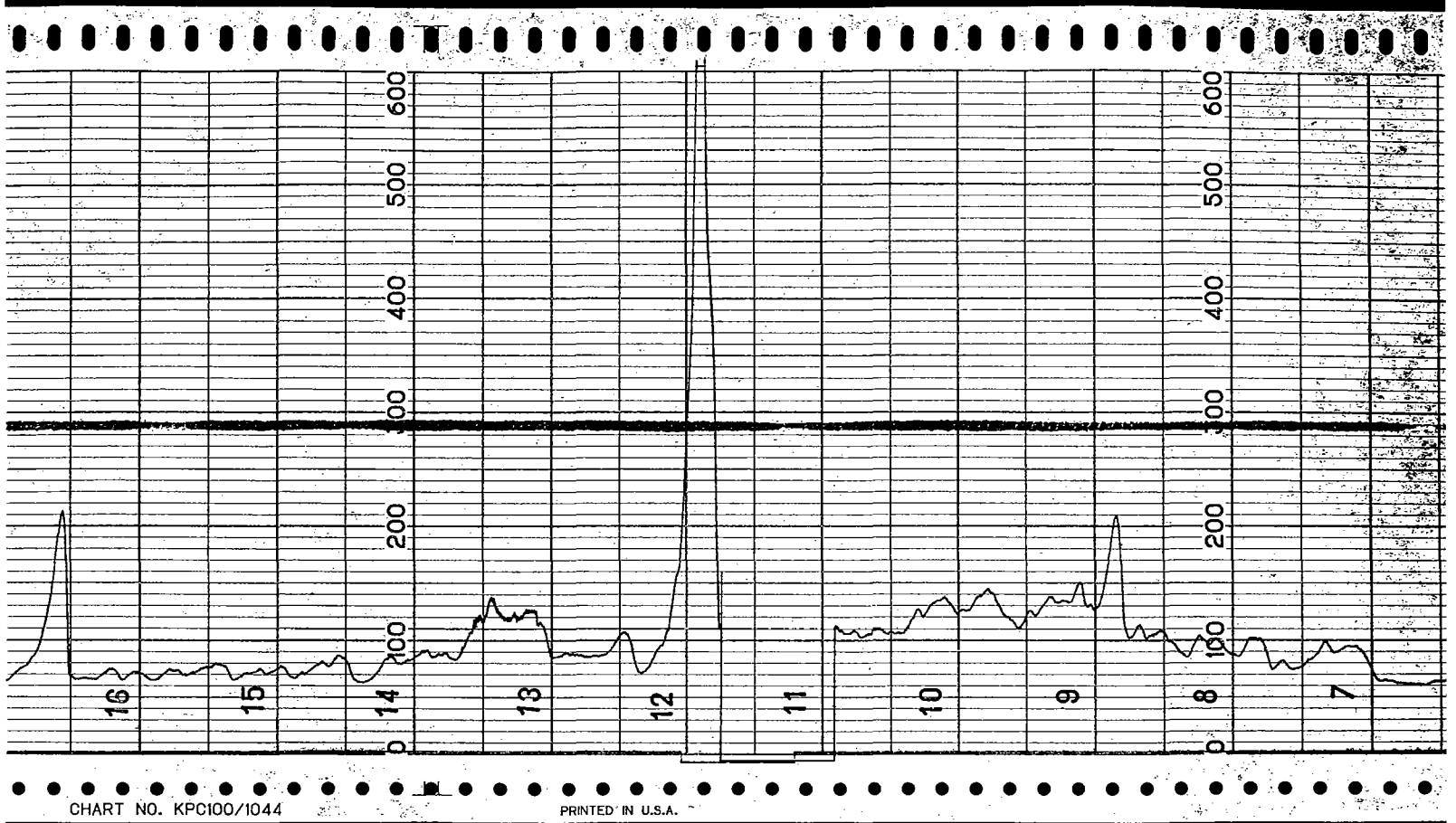
Tom,

I was thinking about the overflow we had on the 26th. (to the OWW)The amount that over flowed was given to me incorrectly. The Technician read the sanitary chart recorder at face value which showed 500 gpm overflow. It is actually 1/3 of that flow. (About 200 gpm) The overflow was therefore only 200 gpm for 30 minutes NOT 6oo for 30 minutes.

I called Tim Dean at the city of Portland and explained it to him. He is expecting a report from Wacker in the next couple of days. I will help with whatever you come up with. I guess you have spent some time talking to him.

Get ahold of me when you come back to work.

Justin



no - December 26, 96

D/T/Prob Permit Testing
Corr Power outage - 1hr.

OWW - pH. 6.87
F- . 0.35 ppm

December 27th 96

Author: Kirk Benson at WSC-PORTLAND
Date: 12/27/96 6:02 PM
Priority: Normal
TO: Mail List - #ERT Reports
CC: Anton Vouk
Subject: ERT REPORT FORM

---------- Message Contents ----------

Date of Report: 12-27-96

Date of Incident: 12-26-96

Your Name: Kirk Benson

Time: Start_1045_ Finish_2130_

Location of incident: Campus-wide (F-1, F-2,)

ERT members involved: K. Benson, R. Ontiveros, T. Bentley, P. Marty, K. Willison, A. Cox, J. Warfield, S. Palmore

Other personnel involved: Don Crane, Pat Turina (Smith Technology Corp.), Pat Horvath, Anton Vouk, John Bamford, Yvonne Grochowski, and many others...

Nature of incident: Power failure affecting all buildings / Acid Gas fumes in Fab 1 Acid Etch.

Due to inclement weather, all WSC buildings experienced a loss of power for approx. 54 minutes. During this period, several events occurred and are described below:

1. Local Evacuation of all Fab 2 production areas, due to loss of power and resultant loss of General Process Exhaust, all Makeup Air Handlers (MAH's), and Return Air Handlers (RAH's). Power was restored at 1139, but we were asked to not allow entry in the production areas until the cleanrooms stabilized. Entry to all areas was then allowed at 1400 hrs.

2. Local Evacuation of all Fab 1 production areas - similar results as Fab 2 (see above - with the exception of Acid Etch noted below).

3. Acid Gas fumes in Fab 1 Acid Etch created due to power loss on the Poly-rod Etch tool. This tool was in mid-process when the power failure occurred, trapping a polyrod in the HF/HNO3 etch bath. This etch bath has a remote reservior with a cooling loop and a circulating pump. When the power failure occurred, the circulation pump had stopped. This allowed the reaction in the etch bath to continue without the ability to control the bath temperature. This tool is also equipped with an internal laminar air flowhood, which stopped running when the tool lost power. The NOx scrubber lost power as well, due to a failure on a main transformer that services the scrubber. All of this allowed HF/HNO3 fumes from this tool to accumulate in the main Acid Etch room and, to a lesser degree, several adjacent rooms. When power was restored, ERT's Benson and Willison suited to full level "B" gear, entered the area, activated the Emergency Exhaust Fan, powered-up and drained the acid from both the Polyrod Etch and Slug Etch wetbenches. Multiple witnesses report seeing fumes seeping through the doors and pass-throughs into Primary Inspection, Wafer Annealing, and Fine Grit Lapping/Gowning areas. All of these areas were then sealed-off until thorough decontamination could occur. Reidell Environmental was then called for assistance in decontamination. Mr. Pat Turina of Smith Technology Corp. was dispatched to WSC by Reidell. Upon his arrival, Mr. Turina was briefed on the incident and had a crew of five come in and perform a thorough decontamination of the Acid Etch room, the adjacent service chases, and the Fine Grit Lapping Measurement room, as well as train local production personnel to clean the Wafer Anneal, Primary Inspection, and Fine Grit Lapping rooms. Decontamination of all exposed surfaces was performed in a two-step process using only DI water, cleanroom wipers, cleanroom mops, and mop buckets. All DI water buckets were replenished with fresh DI

water every 15 minutes, with effluent going to CAD floor drains in Acid Etch. All contaminated wipers and gloves used were double-bagged and placed in the Hazardous Waste Storage area.

For chemical spills/leaks

What was spilled/leaked: HF/HNO3 fumes

Quantity spilled/leaked: Unknown

Clearance air sample results: 0.0 - 0.1 ppm HF via local Sensidyne at termination of response (levels were as high as 12.6 ppm HF in the Main Acid Etch Room).

Blood or body fluids involved: Y NO (circle one)

Personal protective equipment used: Full Level "B"

ERT equipment used: Fab 1 Cart

Health Unit supplies used: N/A

Disposal of waste: Liquid to CAD; Solids to Hazardous Waste Storage

Comments: Need to retrofit ALL wetbenches plantwide with automatic drain/DI flush in case of power loss, EMO activation, or fume detection. Modifications to the WWTP forwarding sumps may also be required.

Author: Michael Ballaris at WSC-PORTLAND
Date: 12/24/96 6:33 PM
Priority: Normal
TO: Don Atkinson
TO: Michael Ballaris
TO: Richard Bell
TO: Kirk Benson
TO: Tom Bentley
TO: Nick Bloom
TO: Bob Braskett
TO: Andrea Buchholz
TO: Linda Canham
TO: Jim Carson
TO: Jim Clifton
TO: Aaron Cox
TO: Robert Craig
TO: Don Crane
TO: Justin Darr
TO: Chuck Dunnewind
TO: Bill Dyer
TO: Ed Herb
TO: Kirsten Johnson
TO: Kenneth Kemper
TO: Ted Lehuquet
TO: Tim Marks
TO: Paul Marty
TO: Tom McCue
TO: Richard Ontiveros
TO: Steve Palmore
TO: Noble Powell
TO: Ann Schowalter
TO: FAB1 Security
TO: FAB2 Security
TO: John Smith
TO: Alan Valerio
CC: Rethy Meng
CC: Cyndi King
CC: David Diver
CC: Mark Chase
CC: Sonia Agnew
CC: Vernon Knepprath
CC: Olom Philavanh
Subject: ERT REPORT FORM
---------- Message Contents ----------

Date of Report:12/24/96

Date of Incident:12/24/96

Your Name:Michael Ballaris

Time: Start 0811__ Finish_1200_

Location of incident:FAB 2

ERT members involved:Rick Martin, Rick Hale, John McDonald, Phil King, Steve Johnstun, Sven Swenson, Ted Blandin, Dave Diver, Fernando,Alan Valerio.

Other personnel involved:Jim Long, Bart Ekoff, Paul Wetkey, Tom Labrado, Olom P.

Nature of incident:Lost all exhaust except acid etch. Local evac/ fire alarm in EPI, FINAL CLEANING, and HEAT TREAT areas. Due to the exhaust being down we evacuated all effected areas and drained the baths. Did our sweeps, everything OK. Check all areas were the cause for the alarm could have come from, everything checked out OK. Facilites came over and helped. Tom L. and Olom P. called in. (They responded very quickly too) Simplex stand by called in. Tom Porter paged, Ann Schowalter was called, Kirk Benson was called, and sec. called / paged a few other people as well. Noble Powell came in. I do not know yet, why these alarms came in. Johnson Control, not

commutcating with Life Safety. Olam switched the general exhaust to IN HAND MODE and we were able to reset alarms. Note, not all areas where the exhaust went down got local alarms.

For chemical spills/leaks

What was spilled/leaked:

Quantity spilled/leaked:

Clearance air sample results:

Blood or body fluids involved: Y N (circle one)

Personal protective equipment used:

ERT equipment used:

Health Unit supplies used:

Disposal of waste:

Comments:

PACIFIC
ENVIRONMENTAL
LABORATORY INC.

June 22, 1993

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Salyer

RE: JOB #
P.O.# 30381
PROJECT -

Enclosed are test results for your samples received in this lab on Jun. 17, 1993. For your reference, these analyses have been assigned our PEL # 93-1818.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

Please call if you have any questions.

Respectfully,

Howard Holmes
Project Manager

Rob May
Project Manager

9405 S.W. Nimbus Ave. ■ Beaverton, OR 97005 ■ (503) 644-0660 ■ FAX # (503) 644-2202

PACIFIC
ENVIRONMENTAL
LABORATORY INC.

Halogenated Volatile Organic Compounds per EPA 8010
Results In ug/L (ppb)

Client: Wacker Siltronic Corporation
Project:
Received: 06/17/1993

PEL Number: 93-1818
Matrix: water

Sample Name	Analyte	Result	MRL
93-46 & 47 OWW GRAB *[1]	Methylene Chloride	ND	13
	Date Prepped	06/21/93	
	Date Analyzed	06/21/93	
Method Blank	Methylene Chloride	ND	0.50

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

9405 S.W. Nimbus Ave. ■ Beaverton, OR 97005 ■ (503) 644-0660 ■ FAX # (503) 644-2202

PACIFIC
ENVIRONMENTAL
LABORATORY INC.

SURROGATE RECOVERIES (%)

Client: Wacker Siltronic Corporation
Project:

PEL Number: 93-1818
Received: 06/17/1993

Sample Name	Analyte	Result	Control Limits
Halogenated Volatile Organic Compounds per EPA 8010			
93-46 & 47 OWW GRAB	Bromochloromethane	101	75-135
	4-Bromofluorobenzene	91	50-130

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

9405 S.W. Nimbus Ave. ■ Beaverton, OR 97005 ■ (503) 644-0660 ■ FAX # (503) 644-2202

PACIFIC
ENVIRONMENTAL
LABORATORY INC.

COMMENTS

Client: Wacker Siltronic Corporation
Project:

PEL Number: 93-1818
Received: 06/17/1993

1. Detection limit is raised due to dilution necessary for analysis.

9405 S.W. Nimbus Ave. ■ Beaverton, OR 97005 ■ (503) 644-0660 ■ FAX # (503) 644-2202

Wacker Siltronic Corporation

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180
Phone (503) 243-2020
FAX (503) 226-0052

September 11, 1991

Mr. Jim McCadden
Industrial Waste Management
City of Portland
Bureau of Environmental Services
Room 400
1120 S.W. Fifth Avenue
Portland, Oregon 97204-1972

Dear Mr. McCadden:

As a result of our conversation on Thursday, September 5, I am submitting the following description of the events surrounding an overflow event on Saturday, September 7.

As you know, Wacker Siltronic Corporation has been in the process of upgrading and expanding our current wastewater treatment plant, to improve both its efficiency and capacity. As part of this plan, there are times when certain upgrade-related projects can create a burden in the current operations of the treatment system. With advance knowledge of these possible upset conditions, we have tried to anticipate these occurrences and plan to avoid any permit exceedences. Prior to the CAD and WAD pipe relocation project on Saturday, September 7, we had been successful in keeping our discharge within permitted limits.

We anticipated that Saturday's work would stretch our current system, so we selected an alternative which we felt would contain any excess discharge, until our treatment plant could be back in full operation. We choose to utilize the excess capacity of our OWW system and use it as a reservoir to prevent any overflow of WAD water into the sanitary sewer while the WAD piping was being relocated. We also followed the same procedures used two weeks earlier where under similar conditions, no upset occurred. This included a meeting with the operators to discuss the project and our responsibilities if an overflow occurs, and we talked with the contractor to stress the importance of doing the job quickly, before our holding capacity was used up.

On Thursday, September 5, I notified the Bureau of Environmental Services that we would be upgrading our CAD and WAD piping systems on Saturday and would follow the same procedures as previously requested by the Bureau for a possible overflow condition. In the event of an overflow condition, the agreed-upon procedures required us to monitor the overflow, sample for pH every 15 minutes, correct the upset as quickly as possible, and notify the Bureau in our monthly report of any permit exceedences.

On Saturday, September 7, while working to upgrade the WAD tie-in line, the following sequence of events occurred: We lowered the OWW and WAD sumps as much as possible and used sump-pumps to transfer the WAD water to the OWW side for treatment, to

maximize the holding capacity of our forwarding-sumps. At about 11:00 a.m., the pumps were unable to transfer the entire flow, resulting in an average overflow of 77 gallons per minute of 2.6 pH wastewater to the sanitary sewer, mixed with our treated discharge of about 150 gpm at 8.5 pH, until approximately 12:30 p.m.

As soon as the overflow occurred, we began taking pH measurements. Based on an initial result showing a pH of 2.6, we resampled the water in our lab to verify the data. Upon verification, we raised the pH of OWW outflow water which mixed with the low pH WAD water, in an attempt to raise the pH of our combined discharge to within permit limits. We then radioed the production facilities to reduce their output. By this time, it was 12:30 p.m. and the upgrade work was complete and our wastewater treatment plant returned to normal operating conditions.

During the 90 minute period, our priority was to correct the problem as quickly as possible. Additionally, pH measurements were taken every 15 minutes and ranged from 2.4 to 2.9. The Bureau was notified on Saturday, at 2:55 p.m. of the overflow, after the appropriate calculations could safely be made regarding the quantities and pH's involved.

Wacker Siltronic believes that it met all conditions of the agreed-upon procedures regarding preparation, overflow operations and reporting surrounding this event.

In order to prevent this kind of event from recurring, we will look more closely at all available options which might improve our treatment efficiency under certain reduced treatment capacities. This would include better preplanning with both the construction contractor(s) to insist on permit adherence and production personnel to reduce their discharges during construction work until the upgrade is complete. The logistics of this event, especially around tie-in type projects where piping will be disconnected, will be more thoroughly evaluated.

We apologize for the upset, because we had tried to avoid it. If you have any questions, please call me at 243-2020, ext. 132.

Sincerely,

WACKER SILTRONIC CORPORATION

Kent C. Mayer

Kent C. Mayer, Environmental Engineer

cc: Tom McCue, WSC
John Pittman, WSC

RECEIVED
ENGINEERING

FEB 24 1991

John L. Pittman
Wacker Siltronic

Wacker Siltronic Corporation

WACKER

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180
Phone (503) 243-2020
FAX (503) 226-0052

September 27, 1991

Mr. Jim McCadden
Industrial Waste Management
City of Portland
Bureau of Environmental Services
1120 S.W. Fifth Avenue, Room 400
Portland, Oregon 97204-1972

Subject: Final Compliance Report

Dear Mr. McCadden:

This is the Final Compliance Report as required by our Municipal Discharge Permit No. 469-01. Based on the results of the periodic compliance monitoring period of April, May, and June, 1991, which indicated that Wacker Siltronics was in compliance with the applicable pretreatment standards, I hereby certify that; Based on my inquiry of the persons or persons directly responsible for managing compliance with the pretreatment standard for total toxic organics, I certify that, to the best of my knowledge and belief, no dumping of concentrated toxic organics has occurred since filing the last discharge monitoring report. I further certify that this facility is implementing the toxic organic management plan submitted to the control authority.

If you have any question, please call me at 243-2020, ext. 132.

Very truly yours,

WACKER SILTRONIC CORPORATION

Kent C. Mayer

Kent C. Mayer
Environmental Engineer

Enclosures

cc: John Pittman
Tom McCue

Portland, Oregon
Industrial Sewage Division

Permit Number: 469-01
EPA Class: Electronic Crystals and manufacture of electronic crystals.

MUNICIPAL PRETREATMENT PROGRAM PERMITTEE MONITORING REPORT

April 1991
MONTH YEAR

FROM: Wacker Siltronic Corp.
P.O. Box 83180
Portland, OR 97283-0180

PLANT LOCATION: 7200 N.W. Front Ave.
Portland, OR 97210

CONCENTRATION mg/l									
Sampling Date	Frequency ↓ Sample* →	As c	Cd c	Cr c	F c	Lbs F c	TTO g	TCE g	TSS g
	Weekly								
4-5-91					0.9	1.4		0.003	
4-12-91					0.1	0.1		<0.002	
4-19-91					0.2	0.3		0.004	
4-26-91					0.2	0.3		0.002	
	Semi Annual								

pH: Summary of Data:

Date	Duration of excursion (≥ 15 min.)	pH (max.)	pH (min.)

Sample*: c - 24 hour sampling, composited, compared with "Mo. Ave."
g - grab sample, compared with "Daily Max."

Tom McCu
Authorized Signature

SCOEPA00019018

'ortland, Oregon
ndustrial Sewage Division

Permit Number: 469-01
EPA Class: Electronic Crystals and manufacture of electronic crystals.

MUNICIPAL PRETREATMENT
PROGRAM
PERMITTEE MONITORING REPORT

May 1991
MONTH YEAR

ROM: Wacker Siltronic Corp.
P.O. Box 83180
Portland, OR 97283-0180

PLANT
LOCATION: 7200 N.W. Front Ave.
Portland, OR 97210

		CONCENTRATION mg/l							
Sampling Date	Frequency ↓ Sample* →	As c	Cd c	Cr c	F c	Lbs F c	TTO g	TCE g	TSS g
	Weekly								
5-3-91		--	--	--	0.3	0.5	--	<0.002	166
5-10-91		--	--	--	0.4	0.5	--	<0.002	162
5-17-91		--	--	--	0.3	0.5	--	0.002	202
5-24-91		--	--	--	0.1	0.2	--	<0.0006	178
5-31-91		--	--	--	7.3	6.9	--	<0.0008	316
	Semi Annual								

: Summary of Data:

te	Duration of excursion (≥ 15 min.)	pH (max.)	pH (min.)
	None		

ıple*: c - 24 hour sampling, composited, compared with "Mo. Ave."
g - grab sample, compared with "Daily Max."

T. McCu
:horized Signature

SCOEPA00019019

CITY OF PORTLAND
INDUSTRIAL DISCHARGE REPORT

INDUSTRY NAME:	Wacker Siltronic Corporation		(FOR CITY USE ONLY)
PERMIT NUMBER:	469-01	REPORT TYPE (CHECK ONE)	
REPORT DUE DATE:	July 15, 1991	☐ BASELINE MONITORING	
SAMPLING PERIOD:	June, 1991	☐ PERIODIC COMPLIANCE	
SAMPLE CODE:		☐ SPECIAL COMPLIANCE	
TODAY'S DATE:	July 12, 1991	☐ _____	

SAMPLE DATE >	See Comments	SAMPLE LOCATION >	OWW MV1	SAMPLE TYPE >	X COMPOSITE _ GRAB	DATE RECEIVED AT LAB >	Comments	DATE OF SAMPLE ANALYSIS >	Comments

PARAMETER	CODE	REPORTED CONCENTRATION mg/L	LIMIT mg/l daily	LIMIT mg/l monthly	VIOLATION YES(X)	VIOLATION LEVEL	COMMENTS
pH	843	S.U.	5.5-11.5 S.U.				Within limits
Cadmium	736	<0.020	0.7				June 7, 1991
Cyanide (Total)	878	NA	1.2				
Chromium (Total)	748	<0.010	3.8				June 7, 1991
Cop Total)	752	NA	2.3				
Nickel (Total)	824	NA	3.0				
Lead (Total)	811	NA	0.7				
Zinc (Total)	874	0.018	4.0				June 7, 1991
B.O.D.	729	240	>300=ESSC				Average of 4*, high = 268
T.S.S.	857	190	>350=ESSC				Average of 4*, high = 212
FEM-T Oil & Grease total	913	29					June 25, 1991 (Grab)
FEM-NP O & G Non-polar	915	NA	100				
FEM-P O & G Polar	914	NA	500				
Arsenic		<0.020	0.3				June 7, 1991
Chlorin. Hydroca.		<0.010	0.5				June 25, 1991 (Grab)
Fluoride		4.2	30.0				Average of 4*, high = 14.6
							* Average of 4, taken June 7, 14
							21, & 28, 1991

certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the erso persons who manage the system, or those persons directly responsible for gathering the information, the information submitted s, t e best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting alse information, including the possibility of fine and imprisonment for knowing violations.

Signature: Thomas C. McCla Date: 7-12-91

Form 23-14 rev 3.11.61

SCOEPA00019020

Wacker Siltronic Corporation

WACKER

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180
Phone (503) 243-2020
FAX (503) 226-0052

September 13, 1991

Mr. Larry Erickson
City of Portland
Columbia Boulevard WWTP
5001 North Columbia Boulevard
Portland, Oregon 97203

Dear Mr. Erickson:

This is a follow-up report to an incident which occurred at the Wacker Siltronic Corporation plant site in Portland on Wednesday, September 11, and reported to your agency the same day, regarding a release from our Weak Acid Drain (WAD) wastewater system.

At 10:00 a.m. the Facilities and Environmental departments received a call from security personnel saying there was a problem at the wastewater treatment plant. Upon inspection, the Facilities Supervisor found that the inlet-valve to the Weak Acid Drain (WAD) storage tank had been sheared-off by a piece of heavy equipment, operated by a contractor doing some construction work in the area. About 4,000 gallons of WAD water had flowed out of the storage tank and onto the ground. At approximately 10:05 a.m., our Emergency Response Team (ERT) had responded and was on the scene to assist with the operation.

We curtailed plant production and shut down the plant-wide WAD drain system to stop the flow of water going to the forwarding-sump. We then disconnected the power to the WAD sump and used pumps to transfer any wastewater in the sump across to the CAD and OWW forwarding-sumps, in an effort to stop the flow of water going to the damaged storage tank.

We also pumped the WAD water which had flowed onto the ground at the wastewater treatment plant back into the OWW system for treatment. We estimate that we were able to recover 1,000 gallons of water off the ground, thereby reducing the total amount of water actually released to 3,000 gallons. PH measurements were taken throughout the incident and ranged from 9.0 to 9.6.

We then began gathering the materials necessary to effect repair. At 12:10 p.m. repair was complete and the wastewater treatment system was back to normal operation.

During this time several calls were made to various agencies to report the incident. These included the Oregon Department of Environmental Quality, the Oregon State Fire Marshall,

the City Of Portland Wastewater Columbia Boulevard Treatment Plant and Bureau of Environmental Affairs, and the Oregon Emergency Response Center.

A determination was made that there were no Reportable Quantities (RQ's) involved, based on a chemical assessment of constituents that could be present. This was based on the following rationale: Prior wastewater analysis for Total Toxic Organic (TTO) constituents showed that no TTO's were present at detectable levels. A review of the chemicals that could be present in the WAD wastewater indicated they are pH dependent and would disassociate in the acid/base mixture, with a pH of 9.0 - 9.6. Finally, a sample was taken and analyzed for fluoride, as a conservative measure, which was present at 1 ppm. One (1) ppm of fluoride in 3,000 gallons converts to .03 pounds. The RQ for fluoride is 100 pounds.

We have instituted several new programs to prevent this kind of incident from happening again. These include daily meetings and progress reports between Wacker and the contractor to discuss each days' activities and possible hazards. There will be weekly construction planning meetings between the facilities supervisors, operators and contractors. Additionally, all excavation work in sensitive areas will be done by hand.

Due to the outstanding efforts of several employees to mitigate any potentially adverse effects on the environment, there were no releases above background levels or permitted limits.

If you have any questions or comments, please feel free to call me at 243-2020, ext. 532.

Very truly yours,

WACKER SILTRONIC CORPORATION

Thomas C. McCue

Thomas C. McCue
Environmental Manager

TCM/KCM:md

cc: John Pittman
Tom Dent

Wacker Siltronic Corporation

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FAX (503) 226-0052

September 13, 1991

Duane Smith
Emergency Management Supervisor
City of Portland
Bureau of Environmental Services
1120 S.W. Fifth Avenue, Room 400
Portland, Oregon 97204-1972

Dear Mr. Smith:

This is a follow-up report to an incident which occurred at the Wacker Siltronic Corporation plant site in Portland on Wednesday, September 11, and reported to your agency the same day, regarding a release from our Weak Acid Drain (WAD) wastewater system.

At 10:00 a.m. the Facilities and Environmental departments received a call from security personnel saying there was a problem at the wastewater treatment plant. Upon inspection, the Facilities Supervisor found that the inlet-valve to the Weak Acid Drain (WAD) storage tank had been sheared-off by a piece of heavy equipment, operated by a contractor doing some construction work in the area. About 4,000 gallons of WAD water had flowed out of the storage tank and onto the ground. At approximately 10:05 a.m., our Emergency Response Team (ERT) had responded and was on the scene to assist with the operation.

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Very truly yours,

WACKER SILTRONIC CORPORATION

Thomas C. McCue

Thomas C. McCue
Environmental Manager

TCM/KCM:md

cc: John Pittman
Tom Dent

Wacker Siltronic Corporation

WACKER

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180
Phone (503) 243-2020
FAX (503) 226-0052

September 13, 1991

Allan Coil
Oregon Emergency Management
595 Cottage Street, N.E.
Salem Oregon 97310

Re: Incident No. 91-1191

Dear Mr. Coil:

This is a follow-up report to an incident which occurred at the Wacker Siltronic Corporation plant site in Portland on Wednesday, September 11, and reported to your agency the same day, regarding a release from our Weak Acid Drain (WAD) wastewater system.

At 10:00 a.m. the Facilities and Environmental departments received a call from security personnel saying there was a problem at the wastewater treatment plant. Upon inspection, the Facilities Supervisor found that the inlet-valve to the Weak Acid Drain (WAD) storage tank had been sheared-off by a piece of heavy equipment, operated by a contractor doing some construction work in the area. About 4,000 gallons of WAD water had flowed out of the storage tank and onto the ground. At approximately 10:05 a.m., our Emergency Response Team (ERT) had responded and was on the scene to assist with the operation.

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Very truly yours,

WACKER SILTRONIC CORPORATION

Thomas C. McCue

Thomas C. McCue
Environmental Manager

TCM/KCM:md

cc: John Pittman
Tom Dent

Wacker Siltronic Corporation WACKER

Wacker Siltronic Corporation
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Portland, OR 97283-0180
Phone (503) 243-2020
FAX (503) 226-0052

September 13, 1991

Bill Braver
Oregon State Fire Marshall
Hazardous Material Division
4760 Portland Road, N.E.
Salem, Oregon 97305-1760

Dear Mr. Braver:

This is a follow-up report to an incident which occurred at the Wacker Siltronic Corporation plant site in Portland on Wednesday, September 11, and reported to your agency the same day, regarding a release from our Weak Acid Drain (WAD) wastewater system.

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Very truly yours,

WACKER SILTRONIC CORPORATION

Thomas C. McCue

Thomas C. McCue
Environmental Manager

TCM/KCM:md

cc: John Pittman
Tom Dent

Wacker Siltronic Corporation WACKER

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180
Phone (503) 243-2020
FAX (503) 226-0052

September 13, 1991

Mr. George Yun
Environmental Consultant
Northwest Region
Department of Environmental Quality
811 S.W. 6th Avenue
Portland, Oregon 97204-1390

Dear Mr. Yun:

This is a follow-up report to an incident which occurred at the Wacker Siltronic Corporation plant site in Portland on Wednesday, September 11, and reported to your agency the same day, regarding a release from our Weak Acid Drain (WAD) wastewater system.

At 10:00 a.m. the Facilities and Environmental departments received a call from security personnel saying there was a problem at the wastewater treatment plant. Upon inspection, the Facilities Supervisor found that the inlet-valve to the Weak Acid Drain (WAD) storage tank had been sheared-off by a piece of heavy equipment, operated by a contractor doing some construction work in the area. About 4,000 gallons of WAD water had flowed out of the storage tank and onto the ground. At approximately 10:05 a.m., our Emergency Response Team (ERT) had responded and was on the scene to assist with the operation.

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Very truly yours,

WACKER SILTRONIC CORPORATION

Thomas C. McCue

Thomas C. McCue
Environmental Manager

TCM/KCM:md

cc: John Pittman
Tom Dent

Introduction

Purpose of Document

The purpose of this excavated soil management plan is to describe the procedures necessary to handle, characterize, and dispose of excavated soil during site work for the Fab 2 project at the Wacker Siltronic site in Portland, Oregon.

Background

Wacker Siltronic Corporation is located at the west end of Front Street in the northwest part of Portland, Oregon, and manufactures high-purity silicon wafers, the raw material for the electronics industry. Environmental studies of the site have shown that some of the existing soil onsite is contaminated with volatile organic compounds (VOCs) and semi-VOCs.

The Fab 2 structure is rectangular shaped, approximately 200 by 325 feet on a side, and will consist of a three-story building and associated support facilities. Contaminated soil may be encountered during construction of underground utilities.

In June 1990, Wacker sampled the site using a two-phase approach. The Phase 1 investigation consisted of sampling subsurface soils for chemical analysis during geotechnical drilling. The Phase 2 investigation consisted of sampling groundwater and soil gas using probes pushed below the top of the groundwater table.

Excavation Activities

Soil Management

Contaminated soils may be generated during subsurface excavation activities. Installation of underground utilities and excavation of two elevator shafts are potential activities that could generate contaminated soils. Wacker staff will oversee the excavation activities and will determine whether the soil has potential contamination.

If Wacker staff determine that a soil is potentially contaminated, then the soil management program will be implemented. The contractor will excavate soil under the guidance of Wacker staff using this waste management plan.

Potentially contaminated soil that is excavated as part of the building construction will be placed into roll-off boxes that will be used to stage the waste onsite as defined in 40 CFR 265.170 through 265.177, Subpart I. Roll-off boxes of the waste shall, at a minimum, meet the following requirements:

SCOEPA00019031

- Be in good condition and be free of rust and structural defects and be leakproof and infiltration proof
- Be closed during storage except to add or remove waste
- Be inspected at least once per week while staged onsite for leaking or deterioration of containers
- Shall not contain free liquids
- Be placed in an area that will drain and remove precipitation, or be elevated or protected from contact with accumulated liquid
- Be cleaned of all waste and decontaminated prior to demobilization of the roll-off boxes

Containers used to store waste generated during the construction excavations shall be labeled with the words "Potential Hazardous Waste" and with the date that the waste was placed in the container. Hazardous waste shall be staged onsite for less than 90 days, in accordance with 40 CFR 262.34. Solid waste shall be staged for less than 30 days, in accordance with DEQ policy. If solid waste is required to be staged for more than 30 days, DEQ will be notified.

Training Requirements

Personnel associated with excavation, utility construction, handling, or exposure to potentially contaminated soil at the Wacker Fab 2 facility should follow hazardous waste operations and emergency response procedures as defined in 29 CFR 1910.120. The CH2M HILL Health and Safety Plan is provided in Appendix A.

Waste Characterization

Sampling Procedure

Each roll-off box will be individually sampled, and the samples will be analyzed for disposal purposes. The sampling and analysis will determine whether the waste is characterized as a solid waste or hazardous waste. To collect a representative sample for proper characterization, a systematic-random, two-dimensional sampling grid will be used. One representative sample will be collected from each roll-off box.

Each roll-off box will be numbered consecutively and divided into six grids (Figure 1). One-third of the sample volume will be collected from grid locations 1, 2, and 3. The locations of grids 1, 2, and 3 will be determined by matching the roll-off box number with the grid locations, as shown on Figure 1. For example, roll-off box number 4 will be sampled from

SCOEPA00019032

grids located in the upper right corner (1), lower left corner (2), and the grid located in the middle on the right side (3) (Figure 1).

Soil samples will be collected using disposable stainless steel spoons. A new spoon shall be used at each grid location in each roll-off box. Each sample will be prepared as specified in the Analytical Methods section of this plan. Each sample will be labeled using the following notation:

WSC-BOX #
01/01/00
Sampled by:

where,

WSC = Wacker Siltronic Corporation
BOX # = Roll-off box number (1,2,3...)
01/01/00 = Date of Sample Collection
Sampled by = Person collecting sample

After each representative sample has been collected and labeled, the sample jar will be placed in a Ziploc bag and secured. Each sample will be placed in a metal or plastic cooler and cooled to 4°Celsius. Samples will be delivered to the analytical laboratory using chain-of-custody procedures.

Analytical Methods

Analysis of each sample will be conducted in a phased approach. The first phase of characterization will determine whether the soil is a hazardous waste. The second phase will determine whether the soil can potentially be accepted at the Hillsboro Landfill. A summary of analytical methods, sample containers, and holding times is shown in Table 1. One 16-ounce glass sample container will be sufficient to perform the analyses of Phase 1 and Phase 2.

Phase 1 will include toxicity characteristic leaching procedure (TCLP) extraction using EPA Method 1311 and analysis of benzene and 2,4-D using EPA Method 8020 and EPA Method 8150, respectively. The 2,4-D herbicide will be analyzed as part of the characterization process because of the historical presence of 2,4-D on adjacent sites. The material should also be analyzed to determine the flash point of the waste, using EPA Method 1010, and pH, using EPA Method 9040. If the waste meets any of the following criteria, it must be handled and disposed of as a RCRA hazardous waste in accordance with 40 CFR 268.

- TCLP benzene greater than 0.5 mg/kg
- TCLP 2,4-D greater than 10 mg/kg
- Flash point below 140°Fahrenheit
- pH less than or equal to 2 or greater than or equal to 12.5

SCOEPA00019033

DM

Table 1 Analytical Summary				
Analysis	**Analytical Method (EPA)**	**Sample Container**	**Preservative**	**Holding Time**
Phase 1				
TCLP benzene 8240	1311/8020 or 1311/8240	16-ounce glass	None	14 days to extraction and 14 days to analysis
TCLP 2,4-D	1311/8150 yes	16-ounce glass	None	14 days to extraction, 7 days to solvent extraction, and 40 days to analysis
Flash point	1010 ok	16-ounce glass	None	14 days
pH	9040 ok	16-ounce glass	None	Analyze immediately
Phase 2				
TPH-G	Oregon TPH-gasoline	16-ounce glass	None	14 days
TPH-D	418.1 modified	16-ounce glass	None	14 days
PAHS	(8726)	8-oz glass	"	

If the material meets none of these criteria, it should be handled and disposed as a solid waste. Phase 2 analysis will include testing required for acceptance at a solid waste landfill in Oregon. Phase 2 consists of TPH analysis. TPH-gasoline will be quantified using Oregon TPH-G; diesel and heavy oil will be quantified using EPA Method 418.1. Laboratory results from each characterization sample will indicate the disposal method for the material contained in the respective roll-off box.

Waste Disposal

Hazardous Waste

If analytical results indicate that the waste is hazardous, or exceeds the criteria for Hillsboro Landfill, the soil should be disposed of at a RCRA permitted landfill in accordance with 40 CFR 268. Wacker Siltronic has approved the Chemical Waste Management (CWM) hazardous waste landfill, located in Arlington, Oregon. A disposal application and a sample of the soil should be submitted to Chemical Waste Management as early as possible. Approval of the landfill application can take up to 3 weeks.

Solid Waste

In order to dispose of the soil as solid waste, laboratory analysis must indicate, at a minimum, all of the following:

SCOEPA00019034

Dm

- EPA 418.1 <50,000 milligrams per kilogram (mg/kg)
- Oregon TPH-Gasoline <10,000 mg/kg
- TCLP benzene <0.5 mg/L
- TCLP 2,4-D <10 mg/L
- Flash point >140°F

Wacker has approved the Hillsboro Landfill, located in Hillsboro, Oregon, as an acceptable solid waste landfill. In addition to the analytical criteria listed above, a Hillsboro Landfill application must be completed and approved by landfill staff in order to dispose of material at the landfill.

At the time of disposal, Wacker may choose to investigate costs for disposal of petroleum-contaminated soil at a low temperature thermal desorption unit.

Disposal Costs

Estimated unit excavation, transportation, and disposal costs are outlined in a memorandum from Dave Dailer, CH2M HILL, to Jack Payne, IDC, dated August 12, 1994. As described in the memorandum, costs for excavation, transportation, and disposal of solid waste is estimated at $80 to $100 per ton; and excavation, transportation, and disposal of hazardous waste is estimated at $200 to $250 per ton.

New Regulations

In the September 19, 1994, Federal Register, EPA finalized Phase II of the Land Disposal Restrictions (LDRs) for new and existing waste, effective December 19, 1994. The LDRs established stringent standards prescribing how hazardous wastes must be treated before they can be disposed in or on the land.

Currently there are no treatment standards for benzene or 2,4-D characteristic hazardous waste. Therefore, benzene and 2,4-D characteristic hazardous waste can be landfilled without treatment. Beginning December 19, 1994, benzene and 2,4-D will be required to undergo treatment prior to disposal. In addition, if a waste is hazardous, underlying hazardous constituents will be required to meet the universal treatment standard listed in 40 CFR 268.48.

References

Bensen, Jill. Letter to Michael J. Downs. June 14, 1990.

Bensen, Jill. Letter to John Pittman. March 27, 1991.

Bensen, Jill. Technical memorandum to Bill Matsukado. January 24, 1991.

CH2M HILL Site Safety Plan for Wacker Siltronic Corporation. June 4, 1990.

- EPA 418.1 <50,000 milligrams per kilogram (mg/kg)
- Oregon TPH-Gasoline <10,000 mg/kg
- TCLP benzene <0.5 mg/L
- TCLP 2,4-D <10 mg/L
- Flash point >140°F

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CH2M HILL Site Safety Plan for Wacker Siltronic Corporation. June 4, 1990.

Wacker Siltronic Corporation

WACKER

TO: Tom McCue

FROM: Chip Bloomer

SUBJECT: FAB2 Soils

DATE: February 28, 1995

All soils currently present on the site are not hazardous waste. Written below is a summary of the attached documents showing that the analytical results for the soil demonstrate that it is non-hazardous.

Background

Initially we were running the extraction method for TCLP organics. This method is very time consuming and costly. In early January we switched to total benzene screens for TCLP listed organics in order to turn the samples around faster and save us money. A benzene screen can be performed according to EPA protocol as long as the total analysis of the waste indicates that individual contaminants are present in such low concentrations that the appropriate regulatory thresholds could not possibly be exceeded the TCLP extraction concentrations. In this case the regulatory threshold for a total benzene screen is 10 mg/KG. (If total levels are below 10 mg/Kg than theoretically the extracted benzene can not exceed 0.5 mg/L.)

Detailed Summary of difference in reported lab results:

Initial lab results were reported as **TCLP VOC's** per EPA **1311, 8240** (mg/L)
Screen results were **TCLP VOC's** per EPA **8240** (mg/Kg)

TCLP VOC's	Identifies the list of contaminants tested for.
1311	Is the extraction procedure which changes the sample from solid to liquid and the produces the final units of mg/L.
8240	Is the analytical method used on both solids and liquids. This procedure without the extraction provides total benzene in units of mg/Kg.

As seen in the first analysis the results were in mg/L this is because the extraction method 1311 was used. The extraction fluid from this method is equal to 20 times the weight of the solid phase. (ie a 20 times dilution of solid sample).

Sampling Procedure for Drop Boxes / Soil

Sampling equipment:

- Sample dipper (stainless steel)
- Spoon (stainless steel, for mixing)
- Bowl (stainless steel, mixing)
- Gloves
- Safety glasses
- 8 oz. wide mouth glass jar labeled
- Ziploc bags for jars

1. Sample drop boxes using the grid system, copy attached.
2. Mix soil sample well with spoon in above bowl.
3. Fill the jar completely to the top, avoiding any head space
4. Fill out Chain of Custody, sample log sheet and sample description.
5. Clean sample equipment with acetone followed by washing with non phosphate soap. Rinse with DI water. Store in DI water.

Dianne Mullan
Facilities Lab Technician

ROLL-OFF BOX NO.	GRID	
1	2	1
	5	6
	3	4
2	3	1
	4	5
	2	6
3	1	4
	2	6
	5	3
4	6	1
	5	3
	2	4
5	6	3
	1	5
	4	2

ROLL-OFF BOX NO.	GRID	
6	4	3
	1	2
	6	5
7	5	1
	4	6
	2	3
8	5	1
	6	4
	2	3
9	6	4
	3	2
	5	1
10	5	3
	6	1
	2	4

Figure 1
SCHEMATIC-RANDOM NUMBER SAMPLING SCHEMATIC
WACKER SILTRONIC CORPORATION
PORTLAND, OREGON

CH2M HILL

9435FG01.DWG

ROLL-OFF BOX NO.	GRID	
1	2	1
	5	6
	3	4
2	3	1
	4	5
	2	6
3	1	4
	2	6
	5	3
4	6	1
	5	3
	2	4
5	6	3
	1	5
	4	2

ROLL-OFF BOX NO.	GRID	
6	4	3
	1	2
	6	5
7	5	1
	4	6
	2	3
8	5	1
	6	4
	2	3
9	6	4
	3	2
	5	1
10	5	3
	6	1
	2	4

Figure 1
SCHEMATIC-RANDOM NUMBER SAMPLING SCHEMATIC
WACKER SILTRONIC CORPORATION
PORTLAND, OREGON

CH2M HILL

9435FG01.DWG

ROLL-OFF BOX NO.	GRID	
1	2	1
	5	6
	3	4
2	3	1
	4	5
	2	6
3	1	4
	2	6
	5	3
4	6	1
	5	3
	2	4
5	6	3
	1	5
	4	2

ROLL-OFF BOX NO.	GRID	
6	4	3
	1	2
	6	5
7	5	1
	4	6
	2	3
8	5	1
	6	4
	2	3
9	6	4
	3	2
	5	1
10	5	3
	6	1
	2	4

Figure 1
SCHEMATIC-RANDOM NUMBER SAMPLING SCHEMATIC
WACKER SILTRONIC CORPORATION
PORTLAND, OREGON

CH2M HILL

9435FG01.DWG

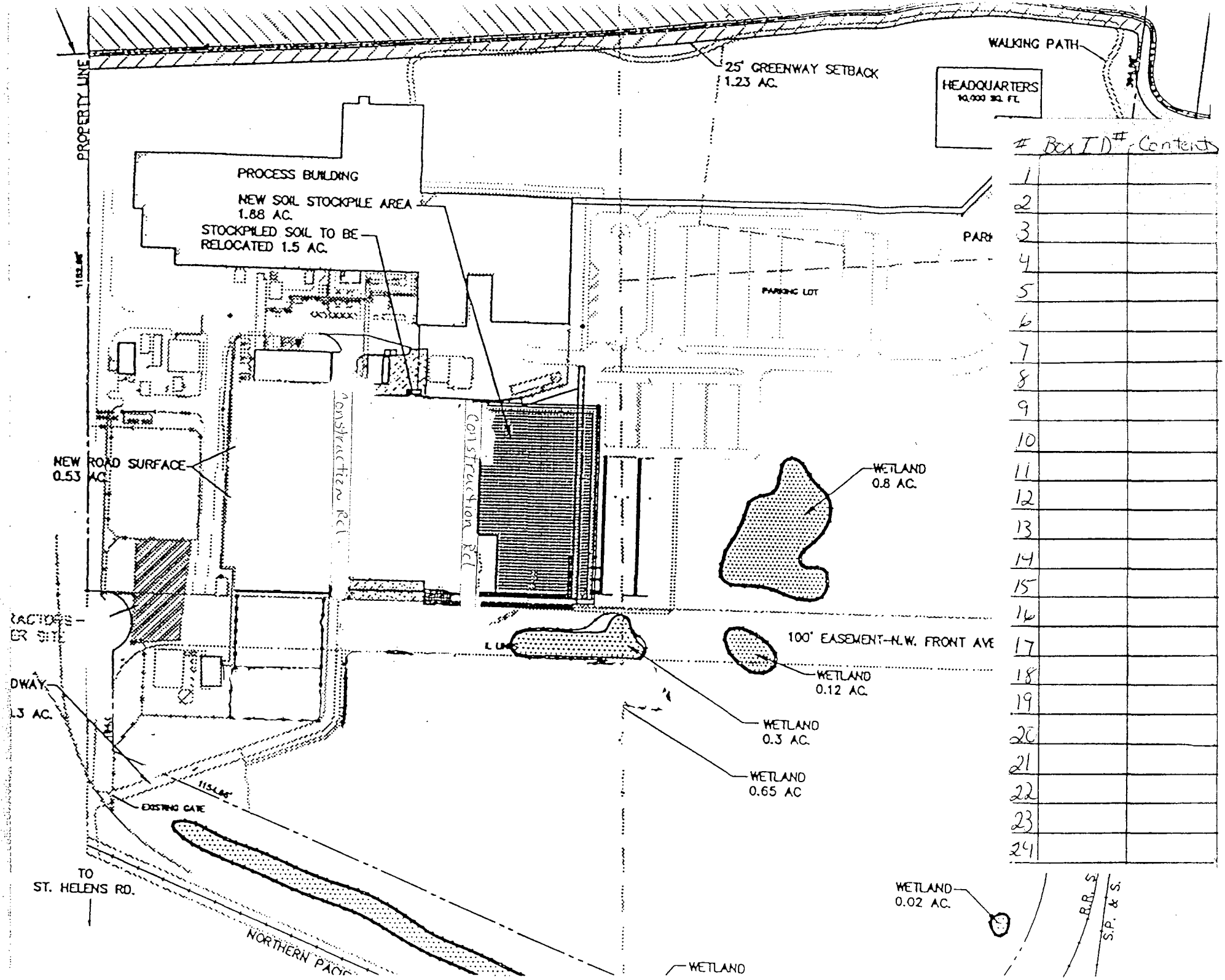
ROLL-OFF BOX NO.	GRID	
1	2	1
	5	6
	3	4
2	3	1
	4	5
	2	6
3	1	4
	2	6
	5	3
4	6	1
	5	3
	2	4
5	6	3
	1	5
	4	2

ROLL-OFF BOX NO.	GRID	
6	4	3
	1	2
	6	5
7	5	1
	4	6
	2	3
8	5	1
	6	4
	2	3
9	6	4
	3	2
	5	1
10	5	3
	6	1
	2	4

Figure 1
SCHEMATIC-RANDOM NUMBER SAMPLING SCHEMATIC
WACKER SILTRONIC CORPORATION
PORTLAND, OREGON

CH2MHILL

9435FG01.DWG



#	Box ID #	Contents
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		

SCOEPA00019043

IDENTIFICATION OF SAMPLES

WSC#	BOX#	ID#	DATE	NOTE'S
96-581	55		4.22.96	N.W. Corner of WWTP
96-582	56.a			PGE hole N.W. Corner
96-583	56.b			of WWTP ~~of~~ mixture
96-584	56.c			of 56 a+b - NW.
96-585	57			Corner of WWTP
96-586	58			
96-587	59			
96-588	60		4.22.96	
96-589	55		6-24.96	
96-590	56 a			
96-591	56.b			
96-592	56.c			
96-593	57			
96-594	58			
96-595	59			
96-596	60		6.24.96	
96-597	61		9.26.96	
96-598	62			
96-599	63			
96-600	64			
96-601	64			
96-602	61	11.15.96		
96-603	62			
96-604	63			
96-605	64			
~~96~~ 97-606	65	6/2/97		
~~96~~ 97-607	65	No sample		
~~96~~-608	65	8/19/97	PCB + TCLP metal - 8	

IDENTIFICATION OF SAMPLES

WSC#	BOX#	ID#	DATE	NOTE'S
95-581		grab	6-29-95	Sample's 581-596 are
95-582				stock pile area
95-583				soil profile after
95-584				final scrape.
95-585				
95-586				
95-587				
95-588				
95-589				
95-590				
95-591				
95-592				
95-593				
95-594				
95-595				
95-596				
95-597	—	Soil Composite	7-10-95	
95-598	54	Soil pile	7-12-95	
95-599				
95-600				
95-601				
95-602				
95-603				
95-604				
95-605				
95-606				
95-607				
95-608				

610

IDENTIFICATION OF SAMPLES

WSC#	BOX#	ID#	DATE	NOTE'S
95-553	40	161	3-15-95	
95-554	41	166	3-15-95	
95-555	42	162	3-23-95	
95-556	43	176	3-23-95	
95-557	44	H-17	3-23-95	
95-558	45	H-3	3-23-95	
95-559	46	H-7	3-23-95	
95-560	47	164	3-23-95	
95-561	48	174	3-23-95	
95-562	49	H4	3-23-95	
95-563	50	118	3-24-95	
95-564	51	120	3-24-95	
95-565	52		3-27-95	
95-566	53		3-27-95	
95-567	—	Soil Pile area	4-11-95	soil stock pile
95-568	—	stock mid Pile	5-10-95	Stockpile 5-10-95
95-569	—	Stock Pile left	5-10-95	Stock pile 5-10-95
95-570		Stock Pile	5-23-95	Sample held in fridge
95-571			5-31-95	stock pile composite #1
95-572			5-31-95	Stock Pile composite #2
95-573			5-31-95	Stock Pile composite #3
95-574	~~Sample was not used~~		5-19-95	① Stock pile ~~gra~~ composite
95-575			5-19-95	② Stock pile composite
95-576		Composite	6-23-95	
95-577		grab		
95-578		grab		
95-579		grab		
95-580		grab	6-29-95	stockpile area (after soil profile scraped)

* forgot to login sample # 95-570; 571 - 5-19-95

IDENTIFICATION OF SAMPLES

WSC#	BOX#	ID#	DATE	NOTE'S
95-525	28	129	1-25-95	
95-526	5	163	1-25-95	sample left behind delivered on 1-26-95
95-527	6	172	1-25-95	
95-528	22	165	1-25-95	
95-529	24	910202	1-25-95	
95-530	25	126	1-25-95	
95-531	26	159	1-25-95	
95-532	27	129	1-25-95	
95-533		Soil	1-27-95	test hole
95-534	23	169	1-27-95	
95-535	30	42024173	1-31-95	
95-536	29B	119	2-08-95	
95-537	31	910200	2-08-95	
95-538	32	910310	2-08-95	
95-539	33	165	2-21-95	
95-540	5	163	2-24-95	~~BET~~ BTEX 8020
95-541	6	172	2-24-95	↓
95-542	23	169	2-24-95	↓
95-543	24	910202	2-24-95	↓
95-544	25	126	2-24-95	↓
95-545	26	159	2-24-95	↓
95-546	34	129	2-27-95	
95-547	—	IPA 12% by Vol	2-27-95	Flash pt.
95-548	35	145	3-01-95	
95-549	36	910215	3-01-95	
95-550	37	168	3-02-95	
95-551	38	135	3-02-95	
95-552	39	173	3-15-95	

IDENTIFICATION OF SAMPLES

WSC#	BOX	ID#	DATE	NOTE'S
94-79		soil	12-8-94	soil behind Nitrogen Tank
94-79.5		soil	12-9-94	soil south of No Tank
94-80		grnd. Water	12-9-94	ground Water behind No Tank
94-500	1	173	12-16-94	
94-501	2	164	12-19-94	
94-502	3	176	12-20-94	
94-503	4	165	12-22-94	
94-504	5	163	12-22-94	
95-505	6	172	1-10-95	
95-506	7	910208	1-4-95	
95-507	8	161	1-4-95	
95-508	9	910206	1-4-95	
95-509	10	910214 ~~1-4-95~~	1-4-95	
95-510	11	166	1-5-95	
95-511	13	910207	1-5-95	
95-512	14	174	1-6-95	
95-513	15	910212	1-6-95	
95-514	5	163	1-10-95	2nd time sampled
95-515	12	4200497	1-10-95	
95-516	20	910210	1-12-95	
95-517	~~4~~ 5	163	1-13-95	3rd x sampled Sent off to No Chem. Wat. mng.
95-518	—	soil	1-16-95	FT-CTR-Arron R. Whoyman
95-519	6	172	1-17-95	2nd x sampled due to added dirt.
95-520	16	910201	1-17-95	
95-521	19	125	1-17-95	
95-522	21	910303	1-17-95	
95-523	18	134	1-18-95	
95-524	5	163	1-19-95	Sent out for PPB's

Note * Box 17 was used to fill from an over filled box.

Wacker Siltronic Corporation

WACKER

TO: File

FROM: Sandee

SUBJECT: Soil

DATE: June 15th, 1995

Clean-up
Pemco will scrap all soil under the untreated stockpile and put through their unit.
The soil under the treated stockpile area will be scraped and taken to St. John's.
Straw bails need to be thrown away in a drop box.
All plastic needs to be thrown away in a drop box.

Analytical
The additional data will be faxed to Wacker after Pemco receives the data. All analytical data needs to be faxed to St. John's landfill.

Attn: Janell Davis
Fax 289-9531
Phone 819-2041

Two samples of soil need to be taken under the stockpile area after the area has been completely cleaned and scraped. Dianne knows where to take the samples.

Copies of all of the treated soil data needs to be put into the soil notebook.

Billing
Pemco to date has failed to meet the TPH 418.1 requirements for two piles. The two hundred tons needs to be taken off of the final bill. In addition approximately 30 tons of sand was ran through the unit on June 9th during stack testing.

Pemco will also send the run logs to Wacker as soon as they get them. These need to be filed in the soil notebook.

Wacker needs to notify LNH Grading of the amount of soil Wacker took to St. John's landfill after pile 40. They will then bill Wacker 50 cents a ton.

Contact at LNH Grading
Jim Beck
Cell phone number: (503) 931-5534

RESULTS RECEIVED
LOG SHEET

Sample: Box-1 #173 **WSC#:** 94-500 **Lab#:** 94-3888

Common analyses done:

TCLP (8): Metals; As, Ba, Cd, Cr, Pb, Hg, Se, Ag
TCLP 1311-8150: 2, 4-D
TCLP 8240: Benzene
TCLP 8270:PAHS
TPH-G
TPH-D
TPH 418.1 (mod.)
Flash Point

Copies: 2 = J. Linden (contractors) 1 = C. Bloomer

Copy	In	Analyses *All TCLP 1311	Copy	In	Analyses
J C	✓	JCLP (8) 1311-6010	J C	✓	JPH-G
J C	✓	JCLP-VOCs 1311-8240	J C	✓	JPH-D
J C	✓	JCLP-BNAS 8270	J C	✓	JPH-418.1(mod.)
J C	✓	JCLP-Pest. 8080	J C	✓	pH
J C	✓	JCLP-Herb. 8150	J C	✓	Flash Point

Notes: preliminary TAT - 12-21-94 - 2 copies to Jerry
12-22-94 - 1 copy to Chip.

NORTH CREEK ANALYTICAL

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

December 22, 1994

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan/Tom Rothschild

RE: JOB # BOX-1-GRID-1-2-3
P.O.# 31002
PROJECT - FAB-1

Enclosed are test results for your samples received in this lab on Dec. 16, 1994. For your reference, these analyses have been assigned our NCA # 94-3888.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

Please call if you have any questions.

Respectfully,

Howard Holmes
Project Manager

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pH per EPA 9045
Results In standard units

Client: Wacker Siltronic Corporation
Project: FAB-1
Received: 12/16/1994
NCA Number: 94-3888
Matrix: soil

Sample Name	Analyte	Result	MRL	Date Prepped	Date Analyzed
94-500	pH	7.0	0-14	12/20/94	12/20/94

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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TCLP per EPA 1311, 6010, 7000 series
Results In mg/L (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-1
Received: 12/16/1994
NCA Number: 94-3888
Matrix: soil

Sample Name	Analyte	Result	MRL	Date Extracted	Date Prepped	Date Analyzed
94-500	Arsenic	ND	0.50	12/18/94	12/19/94	12/20/94
	Barium	0.68	0.50			
	Cadmium	ND	0.020			
	Chromium	ND	0.020			
	Lead	ND	0.20			
	Mercury	ND	0.010			
	Selenium	ND	0.25			
	Silver	ND	0.020			
Method Blank	Arsenic	ND	0.50			
	Barium	ND	0.50			
	Cadmium	ND	0.020			
	Chromium	ND	0.020			
	Lead	ND	0.20			
	Mercury	ND	0.00050			
	Selenium	ND	0.25			
	Silver	ND	0.020			

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019053

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Flashpoint (PMCC)
Results In degrees F

Client: Wacker Siltronic Corporation
Project: FAB-1
Received: 12/16/1994
NCA Number: 94-3888
Matrix: soil

Sample Name	Analyte	Result	MRL	Date Prepped	Date Analyzed
94-500	No flash to	150		12/16/94	12/16/94

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019054

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TPH-G per Oregon DEQ
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-1
Received: 12/16/1994
NCA Number: 94-3888
Matrix: soil

Sample Name	Analyte	Result	MRL	Date Prepped	Date Analyzed
94-500	Gasoline	56	20	12/19/94	12/19/94
Method Blank	Gasoline	ND	2.0		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019055

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TPH-D per Oregon DEQ
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-1
Received: 12/16/1994
NCA Number: 94-3888
Matrix: soil

Sample Name	Analyte	Result	MRL	Date Prepped	Date Analyzed
94-500	Diesel/related	6,100	250	12/16/94	12/16/94
Method Blank	Diesel/related	ND	25		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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TPH-418.1M per Oregon DEQ
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-1
Received: 12/16/1994
NCA Number: 94-3888
Matrix: soil

Sample Name	Analyte	Result	MRL	Date Prepped	Date Analyzed
94-500	TPH	1,100	20	12/16/94	12/19/94
Method Blank	TPH	ND	20		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019057

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TCLP VOC's per EPA 1311, 8240
Results In mg/L (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-1
Received: 12/16/1994
NCA Number: 94-3888
Matrix: soil

Sample Name	Analyte	Result	MRL
94-500 *[1]	Benzene	0.025	0.010
	Carbon Tetrachloride	ND	0.010
	Chlorobenzene	ND	0.010
	Chloroform	ND	0.010
	1,4-Dichlorobenzene	ND	0.010
	1,2-Dichloroethane	ND	0.010
	1,1-Dichloroethene	ND	0.010
	Methyl Ethyl Ketone	ND	0.038
	Tetrachloroethene	ND	0.010
	Trichloroethene	ND	0.010
	Vinyl Chloride	ND	0.025
	Date Extracted	12/19/94	
	Date Prepped	12/20/94	
	Date Analyzed	12/20/94	
Method Blank	Benzene	ND	0.0020
	Carbon Tetrachloride	ND	0.0020
	Chlorobenzene	ND	0.0020
	Chloroform	ND	0.0020
	1,4-Dichlorobenzene	ND	0.0020
	1,2-Dichloroethane	ND	0.0020
	1,1-Dichloroethene	ND	0.0020
	Methyl Ethyl Ketone	ND	0.0075
	Tetrachloroethene	ND	0.0020
	Trichloroethene	ND	0.0020
	Vinyl Chloride	ND	0.0050

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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T.C.L.P. BNAs per EPA 1311, 8270
Results In mg/L (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-1
Received: 12/16/1994
NCA Number: 94-3888
Matrix: soil

Sample Name	Analyte	Result	MRL
94-500	Acenaphthene	0.22	0.0050
	Acenaphthylene	0.0096	0.0050
	Anthracene	0.024	0.0050
	Benzo(a)anthracene	ND	0.0050
	Benzo(a)pyrene	ND	0.0050
	Benzo(b)fluoranthene	ND	0.0050
	Benzo(g,h,i)perylene	ND	0.0050
	Benzo(k)fluoranthene	ND	0.0050
	Benzoic Acid	ND	0.010
	Benzyl Alcohol	ND	0.010
	4-Bromophenyl Phenyl Ether	ND	0.0050
	Butylbenzyl Phthalate	ND	0.0050
	4-Chloro-3-methylphenol	ND	0.0050
	4-Chloroaniline	ND	0.020
	bis(2-Chloroethoxy)methane	ND	0.010
	bis(2-Chloroethyl)ether	ND	0.0050
	bis(2-Chloroisopropyl)ether	ND	0.010
	2-Chloronaphthalene	ND	0.0050
	2-Chlorophenol	ND	0.0050
	4-Chlorophenyl Phenyl Ether	ND	0.0050
	Chrysene	ND	0.0050
	Di-n-butylphthalate	ND	0.0050
	Di-n-octylphthalate	ND	0.0050
	Dibenzo(a,h)anthracene	ND	0.0050
	Dibenzofuran	0.012	0.0050
	1,2-Dichlorobenzene	ND	0.0050
	1,3-Dichlorobenzene	ND	0.0050
	1,4-Dichlorobenzene	ND	0.010
	3,3'-Dichlorobenzidine	ND	0.0050
	2,4-Dichlorophenol	ND	0.0050
	Diethylphthalate	ND	0.0050
	2,4-Dimethylphenol	ND	0.0050
	Dimethylphthalate	ND	0.0050
	4,6-Dinitro-2-methylphenol	ND	0.010
	2,4-Dinitrophenol	ND	0.010
	2,4-Dinitrotoluene	ND	0.0050
	2,6-Dinitrotoluene	ND	0.0050
	bis(2-Ethylhexyl)phthalate	ND	0.0050
	Fluoranthene	0.018	0.0050
	Fluorene	0.065	0.0050
	Hexachlorobenzene	ND	0.0050
	Hexachlorobutadiene	ND	0.010

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019059

NORTH CREEK ANALYTICAL
18939 120th Avenue N.E., Suite 101 • Bothell, WA 98011-9508 (206) 481-9200 • FAX 485-2992
East 11115 Montgomery, Suite B • Spokane, WA 99206-4776 (509) 924-9200 • FAX 924-9290
9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

T.C.L.P. BNAs per EPA 1311, 8270
Results In mg/L (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-1
Received: 12/16/1994
NCA Number: 94-3888
Matrix: soil

Sample Name	Analyte	Result	MRL
94-500 (continued)	Hexachlorocyclopentadiene	ND	0.010
	Hexachloroethane	ND	0.010
	Indeno(1,2,3-cd)pyrene	ND	0.0050
	Isophorone	ND	0.0050
	2-Methylnaphthalene	0.36	0.0050
	2-Methylphenol	ND	0.0050
	4-Methylphenol	ND	0.0050
	Naphthalene	2.4	0.0050
	2-Nitroaniline	ND	0.0050
	3-Nitroaniline	ND	0.010
	4-Nitroaniline	ND	0.010
	Nitrobenzene	ND	0.0050
	2-Nitrophenol	ND	0.0050
	4-Nitrophenol	ND	0.010
	N-Nitroso-di-n-propylamine	ND	0.010
	N-Nitrosodiphenylamine	ND	0.0050
	Pentachlorophenol	ND	0.010
	Phenanthrene	0.16	0.0050
	Phenol	ND	0.0050
	Pyrene	0.017	0.0050
	1,2,4-Trichlorobenzene	ND	0.0050
	2,4,5-Trichlorophenol	ND	0.0050
	2,4,6-Trichlorophenol	ND	0.0050
	Date Extracted	12/16/94	
	Date Prepped	12/19/94	
	Date Analyzed	12/20/94	

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019060

NORTH CREEK ANALYTICAL
18939 120th Avenue N.E., Suite 101 • Bothell, WA 98011-9508 (206) 481-9200 • FAX 485-2992
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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

T.C.L.P. BNAs per EPA 1311, 8270
Results In mg/L (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-1
Received: 12/16/1994
NCA Number: 94-3888
Matrix: soil

Sample Name	Analyte	Result	MRL
Method Blank	Acenaphthene	ND	0.0050
	Acenaphthylene	ND	0.0050
	Anthracene	ND	0.0050
	Benzo(a)anthracene	ND	0.0050
	Benzo(a)pyrene	ND	0.0050
	Benzo(b)fluoranthene	ND	0.0050
	Benzo(g,h,i)perylene	ND	0.0050
	Benzo(k)fluoranthene	ND	0.0050
	Benzoic Acid	ND	0.010
	Benzyl Alcohol	ND	0.010
	4-Bromophenyl Phenyl Ether	ND	0.0050
	Butylbenzyl Phthalate	ND	0.0050
	4-Chloro-3-methylphenol	ND	0.0050
	4-Chloroaniline	ND	0.020
	bis(2-Chloroethoxy)methane	ND	0.010
	bis(2-Chloroethyl)ether	ND	0.0050
	bis(2-Chloroisopropyl)ether	ND	0.010
	2-Chloronaphthalene	ND	0.0050
	2-Chlorophenol	ND	0.0050
	4-Chlorophenyl Phenyl Ether	ND	0.0050
	Chrysene	ND	0.0050
	Di-n-butylphthalate	ND	0.0050
	Di-n-octylphthalate	ND	0.0050
	Dibenzo(a,h)anthracene	ND	0.0050
	Dibenzofuran	ND	0.0050
	1,2-Dichlorobenzene	ND	0.0050
	1,3-Dichlorobenzene	ND	0.0050
	1,4-Dichlorobenzene	ND	0.010
	3,3'-Dichlorobenzidine	ND	0.0050
	2,4-Dichlorophenol	ND	0.0050
	Diethylphthalate	ND	0.0050
	2,4-Dimethylphenol	ND	0.0050
	Dimethylphthalate	ND	0.0050
	4,6-Dinitro-2-methylphenol	ND	0.010
	2,4-Dinitrophenol	ND	0.010
	2,4-Dinitrotoluene	ND	0.0050
	2,6-Dinitrotoluene	ND	0.0050
	bis(2-Ethylhexyl)phthalate	ND	0.0050
	Fluoranthene	ND	0.0050
	Fluorene	ND	0.0050
	Hexachlorobenzene	ND	0.0050
	Hexachlorobutadiene	ND	0.010

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019061

NORTH CREEK ANALYTICAL
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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

T.C.L.P. BNAs per EPA 1311, 8270
Results In mg/L (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-1
Received: 12/16/1994
NCA Number: 94-3888
Matrix: soil

Sample Name	Analyte	Result	MRL
Method Blank (continued)	Hexachlorocyclopentadiene	ND	0.010
	Hexachloroethane	ND	0.010
	Indeno(1,2,3-cd)pyrene	ND	0.0050
	Isophorone	ND	0.0050
	2-Methylnaphthalene	ND	0.0050
	2-Methylphenol	ND	0.0050
	4-Methylphenol	ND	0.0050
	Naphthalene	ND	0.0050
	2-Nitroaniline	ND	0.0050
	3-Nitroaniline	ND	0.010
	4-Nitroaniline	ND	0.010
	Nitrobenzene	ND	0.0050
	2-Nitrophenol	ND	0.0050
	4-Nitrophenol	ND	0.010
	N-Nitroso-di-n-propylamine	ND	0.010
	N-Nitrosodiphenylamine	ND	0.0050
	Pentachlorophenol	ND	0.010
	Phenanthrene	ND	0.0050
	Phenol	ND	0.0050
	Pyrene	ND	0.0050
	1,2,4-Trichlorobenzene	ND	0.0050
	2,4,5-Trichlorophenol	ND	0.0050
	2,4,6-Trichlorophenol	ND	0.0050

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

NORTH CREEK ANALYTICAL
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East 11115 Montgomery, Suite B • Spokane, WA 99206-4776 (509) 924-9200 • FAX 924-9290
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TCLP Pesticides per EPA 1311, 8080
Results In mg/L (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-1
Received: 12/16/1994
NCA Number: 94-3888
Matrix: soil

Sample Name	Analyte	Result	MRL
94-500	Chlordane	ND	0.0050
	Endrin	ND	0.00010
	Heptachlor	ND	0.00010
	Heptachlor Epoxide	ND	0.00010
	Lindane	ND	0.00010
	Methoxychlor	ND	0.00010
	Toxaphene	ND	0.0050
	Date Extracted	12/16/94	
	Date Prepped	12/19/94	
	Date Analyzed	12/19/94	
Method Blank	Chlordane	ND	0.0050
	Endrin	ND	0.00010
	Heptachlor	ND	0.00010
	Heptachlor Epoxide	ND	0.00010
	Lindane	ND	0.00010
	Methoxychlor	ND	0.00010
	Toxaphene	ND	0.0050

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019063

NORTH CREEK ANALYTICAL

18939 120th Avenue N.E., Suite 101 • Bothell, WA 98011-9508 (206) 481-9200 • FAX 485-2992
East 11115 Montgomery, Suite B • Spokane, WA 99206-4776 (509) 924-9200 • FAX 924-9290
9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

TCLP Herbicides per EPA 1311, 8150
Results In mg/L (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-1
Received: 12/16/1994

NCA Number: 94-3888
Matrix: soil

Sample Name	Analyte	Result	MRL
94-500	2,4-D	ND	0.040
	2,4,5-TP (Silvex)	ND	0.020
	Date Extracted	12/16/94	
	Date Prepped	12/19/94	
	Date Analyzed	12/20/94	
Method Blank	2,4-D	ND	0.040
	2,4,5-TP (Silvex)	ND	0.020

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019064

NORTH CREEK ANALYTICAL

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SURROGATE RECOVERIES (%)

Client: Wacker Siltronic Corporation
Project: FAB-1

NCA Number: 94-3888
Received: 12/16/1994

Sample Name	Analyte	Result	Control Limits
TCLP Herbicides per EPA 1311, 8150			
94-500	2,4-Dichlorophenyl acetic acid	68	50-150

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

NORTH CREEK ANALYTICAL

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

COMMENTS

Client: Wacker Siltronic Corporation
Project: FAB-1

NCA Number: 94-3888
Received: 12/16/1994

1. Detection limit is raised due to dilution necessary for analysis.

2. Unable to calculate surrogate recovery due to matrix interference.

3. Surrogate recovery is out of control limits due to matrix interference.

SCOEPA00019066

NORTH CREEK ANALYTICAL

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9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202

CHAIN OF CUSTODY REPORT

CLIENT: Wacker Siltronic Corp

ADDRESS: 7200 N.W. Front Ave
Portland, OR

PHONE: 243-2020 FAX: 241-7599

PROJECT NAME: FAB-1

PROJECT NUMBER: Box-1-Grid-1-2-3

SAMPLED BY: Justin Darr, Dianne Mullen

REPORT TO: Dianne Mullen

BILLING TO:

P.O. NUMBER: 30381

NCA QUOTE #:

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: 10 | 5 | 3 | 2 | [X] 1

(Please Select One)

Fuels & Hydrocarbon Analyses: 5 | 3 | 2 | [X] 1

* *Turnaround Requests less than standard will incur Rush Charge*

FAX RESULTS BY :

Analysis Request:

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	TCLP (8)	TCLP Pesticide (8240)	TCLP (1311/8020) BTEX	Flash Point EPA (1311/8150)	PH EPA (1010)	TPH-4 EPA (9040)	TPH-Gasoline Oregon	TPH-D EPA (418.1) Modified	PAHs EPA (8720)	TCLP Pest	COMMENTS & PRESERVATIVES USED	NCA SAMPLE NUMBER
1. 94-500	12-16-94/0815	S	4	X	X	X	X	X	X	X	X	X		held on ice	
2.															
3.															
4.															
5.															
6.															
7.															
8.															
9.															
10.															

RELINQUISHED BY:		DATE: 12-16-94	RECEIVED BY: Sara McClurg		DATE: 12-16-94
PRINT NAME: Dianne Mullen	FIRM: Wacker Siltronic	TIME: 1:00	PRINT NAME: Sara McClurg	FIRM: NCA	TIME: 1100
RELINQUISHED BY:		DATE:	RECEIVED BY: Denieen Vos		DATE:
PRINT NAME:	FIRM:	TIME:	PRINT NAME:	FIRM: NCA	TIME:

ADDITIONAL REMARKS:

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NORTH CREEK ANALYTICAL

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East 11115 Montgomery, Suite B, Spokane, WA 99206-4779 (509) 924-9200 FAX 924-9290
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202

CHAIN OF CUSTODY REPORT

CLIENT: Wacker Siltronic Corp

ADDRESS: 7200 N.W. Front Ave
Portland, OR

PHONE: 243-2020 FAX: 241-7599

PROJECT NAME: FAB-II

PROJECT NUMBER: Box-1-Grid-1-2-3

SAMPLED BY: Justin Darr, Dianne Mullen

REPORT TO: Dianne Mullen

BILLING TO:

P.O. NUMBER: 30381

NCA QUOTE #:

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: 10 | 5 | 3 | 2 | ~~1~~

(Please Select One)

Fuels & Hydrocarbon Analyses: 5 | 3 | 2 | ~~1~~

* Turnaround Requests less than standard will incur Rush Charges.

FAX RESULTS BY :

Analysis Request:

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	TCLP (8)	TCLP 8240 (1311/8260) EPA	TCLP (1311/8270) EPA	FIGSK Pollut	PH EPA (1010)	TPH-G EPA (9040)	OREGON TPH-Gasoline	TPH-D EPA (8015) Modified	PAHs EPA (8270)	TCLP Pest	COMMENTS & PRESERVATIVES USED	NCA SAMPLE NUMBER
1. 94-500	12-16-94/0815	S	4	X	X	X	X	X	X	X	X	X	X	held on ice	
2.															
3.															
4.															
5.															
6.															
7.															
8.															
9.															
10.															

RELINQUISHED BY:	DATE: 12-16-94	RECEIVED BY: Sara McClurg	DATE: 12-16-94
PRINT NAME: Dianne Mullen FIRM: Wacker Siltronic	TIME: 1100	PRINT NAME: Sara McClurg FIRM: NCA	TIME: 1100
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
PRINT NAME: FIRM:	TIME:	PRINT NAME: FIRM:	TIME:

ADDITIONAL REMARKS:

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LOG SHEET

SAMPLES SENT TO OUTSIDE LABORATORY

1. Facilities Operations # (Year - #): 94-500

2. Date/Time of Sample: 12-16-94 / 0815

3. Name of Sampler: Justin Dorr/Dianne Mallon

4. Sample Description: FAB-2- BOX-1 grid# 1,2, 3

5. Sent To: X North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

___ Wacker's Analytical Laboratory

___ Columbia Analytical Services, Incorporated
1152 3rd Avenue
Longview, Washington 98632
(206) 577-7222

6. Analyses Required: TCLP Benzene (1311/~~8020~~ 8020) TCLP 2,4-D

7. Chain of Custody Submitted: Yes No

8. Purchase Order Number: 30381

9. Cost (or estimate): _____

10. Results Received On: _____

11. Additional Notes; Rush

TJR 15 Nov 91
TJR 1 Jul 94 Revised

FAB-2
SAMPLES SENT TO OUTSIDE LABORATORY

1. WSC# ~~(500 - #)~~: 94-500

2. Date/Time of Sample: 12-16-94 / 0815

3. Name of Sampler: Justin Darr, Dianne Mullan

4. Sample Description: Drop Box-1 Grid-1,2,3

5. Sent To: X North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

___ Wacker's Analytical Laboratory

6. Analyses Required: TCLP 8 (metals) TCLP 8240 (Benzene)
TCLP (1311/8150) (2,4-D) Flash point (1010)

7. Chain of Custody Submitted; (Yes) No

8. Purchase Order Number: 30381

10. Cost (or estimate): _____

11. Results Received On: _____

12. Additional Notes; #6 cont. pH (9040), TPH-G (gasoline)
TPH-D (diesel), TCLP (8270), TCLP (pestiside) *
12-19-94 Verbal results from PEL - TPH-G - 56 ppm
TPH-D: 6100 ppm, Flash Point: ~~110~~ >150, TPH 418.1 = 1,100 ppm
12-21-94 ~~12-21-94~~ Fax - 1311-6010, 1311-8080 (pestisides), TCLP 1311-8150 Herbicides

TJR 15 Nov 91
TJR 01 Nov 91
DEM 19 Dec 94

RESULTS RECEIVED
LOG SHEET

Sample: Box-2 #164 **WSC#:** 94-501 **Lab#:** 94-3922

Common analyses done: *all TCLP = 1311

TCLP (8): Metals; As, Ba, Cd, Cr, Pb, Hg, Se, Ag
TCLP 1311-8150: 2, 4-D
TCLP 8240: Benzene

TCLP 8270:PAHS
TPH-G
TPH-D
TPH 418.1 (mod.)

Flash Point

Copies: 2 = J. Linden (contractors) 1 = C. Bloomer

Copy	In	Analyses	Copy	In	Analyses
X 1	12-22	TCLP(8) 6010	X 1	12-20	TPH-G
X 1	12-20	TCLP-8240	X 1	12-21	TPH-D
X 1 1	12-25	TCLP-8150 (herb.)	X 1	12-20	418.1 (mod) (TPH)
X 1	12-20	Flash Point	X 1	12-25	TCLP-8270
X 1	12-21	pH	X 1 1	12-25	TCLP-Pest. (8080)
		Complete copy			

Notes: 12-22-94 Rec'd preliminary - TPH-D - 8240.

FAB
SAMPLES SENT TO OUTSIDE LABORATORY

1. WSC# (~~500 - #~~): 94-501

2. Date/Time of Sample: 12-19-94 / 1530

3. Name of Sampler: Tom Bentley / Dianne Muller

4. Sample Description: Drop Box -2 (cafeteria-North)
grid # 1, 2, 3

5. Sent To: X North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

___ Wacker's Analytical Laboratory

___ _____

_____

_____

6. Analyses Required: TCLP 8, ~~TCLP~~ TCLP 8240, TCLP 1311-8150, Flash Point
pH 9040, TPH-G, TPH-D, TCLP 8270, TCLP Pest

7. Chain of Custody Submitted; (Yes) No

8. Purchase Order Number: 30381

10. Cost (or estimate): _____

11. Results Received On: 12-20-94

12. Additional Notes; 12-20-94 FAX - Flash Point, TPH-G

_____

_____

_____

TJR 15 Nov 91
TJR 01 Nov 91

NORTH CREEK ANALYTICAL

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9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202

CHAIN OF CUSTODY REPORT

CLIENT: Wacker Siltronic

ADDRESS: 7200 NW. Front Ave
Portland, OR

PHONE: 243-2020 FAX: 241-7599

PROJECT NAME: FAB II

PROJECT NUMBER: 13 OX - 2

SAMPLED BY: Tom Bently, Dianne Mullan

REPORT TO: Dianne Mullan

BILLING TO:

P.O. NUMBER: 30381

NCA QUOTE #:

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: 10 | 5 | 3 | 2 | ~~1~~

(Please Select One)

Fuels & Hydrocarbon Analyses: 5 | 3 | 2 | ~~1~~

* Turnaround Requests less than standard will incur Rush Charges.

FAX RESULTS BY : ASAP

Analysis Request:

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	TCLP (8)	TCLP 8240	TCLP 1311-8150	Flash Point 1010	PH 9040	TPH-G	TPH-D 418.1 modified	TCLP 8270	TCLP PEST.		COMMENTS & PRESERVATIVES USED	NCA SAMPLE NUMBER
1. 94-501	12-19-94/1530	S	3	X	X	X	X	X	X	X	X	X			94-3922
2.															
3.															
4.															
5.															
6.															
7.															
8.															
9.															
10.															

RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
Dianne E Mullan	12-19-94	S Pedersen	12/19/94
PRINT NAME: Dianne F Mullan FIRM: Wacker Siltronic	TIME: 1645	PRINT NAME: FIRM: NCA	TIME: 1645
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
PRINT NAME: FIRM:	TIME:	PRINT NAME: FIRM:	TIME:

ADDITIONAL REMARKS:

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SCOEPA00019073

RESULTS RECEIVED
LOG SHEET

Sample: Drop Box-3-#176 **WSC#:** 94-502 **Lab#:** 94-3924

Common analyses done: All TCLP - 1311

TCLP (8): Metals; As, Ba, Cd, Cr, Pb, Hg, Se, Ag
TCLP 1311-8150: 2, 4-D
TCLP 8240: Benzene
TCLP 8270:PAHS
TPH-G
TPH-D
TPH 418.1 (mod.)
Flash Point

Copies: 2 = J. Linden (contractors) 1 = C. Bloomer

Copy	In	Analyses	Copy	In	Analyses
X 1	12-23	TCLP (8) 6010			
X 1	12-22	TCLP 8240			
X 1	12-22	TCLP - 8150			
X 1	12-22	TPHG			
X 1	12-22	TPH-D			
X 1	12-22	TPH - Mod. (418.1)			
X 1	12-23	TCLP - 8270			
	✓	Complete Results			

Notes: 12-22-94 spoke to Kent w/ PEL verbal - results were faxed

FAB 2
SAMPLES SENT TO OUTSIDE LABORATORY

1. WSC# ~~(500 = #)~~: 94-502 #176

2. Date/Time of Sample: 12-20-94 / 0740

3. Name of Sampler: Gary Kent, Dianne Mullan

4. Sample Description: Box 3 - grid 1,2,3

5. Sent To: X North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

___ Wacker's Analytical Laboratory

___ _____

6. Analyses Required: TCLP (8), TCLP 8240, TCLP-1311-8150
TPH-G, TPH-D 418.1 modified, TCLP 8270

7. Chain of Custody Submitted; Yes No

8. Purchase Order Number: 30381

10. Cost (or estimate): _____

11. Results Received On: _____

12. Additional Notes; _____

TJR 15 Nov 91
TJR 01 Nov 91

NORTH CREEK ANALYTICAL

18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508 (206) 481-9200 FAX 485-2992
East 11115 Montgomery, Suite B, Spokane, WA 98206-4779 (509) 924-9200 FAX 924-9290
15055 S.W. Sequoia Parkway, Suite 110, Portland, OR 97224-7155 (503) 624-9800 FAX 684-3782

CHAIN OF CUSTODY REPORT

CLIENT: Wacker Siltronic

ADDRESS: 7200 N.W. Front Ave
Portland, OR

PHONE: 243-2020 x-374 FAX: 241-7599

PROJECT NAME: FAB-2

PROJECT NUMBER: Drop Box -3

SAMPLED BY: Gary Kent, Dianne Mullan

REPORT TO: Dianne Mullan

BILLING TO:

P.O. NUMBER: 30381

NCA QUOTE #:

SAME DAY RUSH	(+150%)	X
NEXT BUSINESS DAY RUSH	(+100%)	
2 BUSINESS DAY RUSH	(+80%)	
3 BUSINESS DAY RUSH	(+60%)	
5 BUSINESS DAY RUSH	(+40%)	
10 BUSINESS DAY STANDARD	(LIST PRICE)	
5 BUS. DAY HYDROCARBONS	(LIST PRICE)	

Analysis Request:

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	TCLP (8)	TCLP 8240	TCLP 1311-8150	TPH-G	TPH-D 418.1 mod.	TCLP 8270					COMMENTS & PRESERVATIVES USED	NORTH CREEK SAMPLE NUMBER
1. 94-502	10-20-94 0740	S	4	X	X	X	X	X	X					held on ice	94-3924
2.															
3.															
4.															
5.															
6.															
7.															
8.															
9.															
10.															

RELINQUISHED BY: Dianne E Mullan	DATE: 12-20-94	RECEIVED BY: Denean Voss	DATE: 12/20/94
FIRM: Wacker Siltronic	TIME: 0915	FIRM: NCA	TIME: 0915
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
FIRM:	TIME:	FIRM:	TIME:

ADDITIONAL REMARKS:

PAGE OF

SCOEPA00019076

WSC# 94-503
Drop Box - 4
lab # 94-3980

RESULTS RECEIVED
LOG SHEET

Sample: Drop Box-4 #165 **WSC#:** 94-503 **Lab#:** 94-3980

Common analyses done:

TCLP (8): Metals; As, Ba, Cd, Cr, Pb, Hg, Se, Ag
TCLP 1311-8150: 2, 4-D
TCLP 8240: Benzene
TCLP 8270:PAHS
TPH-G
TPH-D
TPH 418.1 (mod.)
Flash Point

Copies: 2 = J. Linden (contractors) 1 = C. Bloomer

Copy	In	Analyses	Copy	In	Analyses
	//	TCLP - 8240			
	/	TPH - Diesel			

Notes: 12-26-94-0945 - spoke with Sara M. - got a verbal ok on - 8240 - will send fax this afternoon - results (preliminary) sent - 1340 pm

SCOEPA00019077

FAB
SAMPLES SENT TO OUTSIDE LABORATORY

1. WSC# (500 - #): 94-503

2. Date/Time of Sample: 12-22-94 / 1315

3. Name of Sampler: Justin Darr, Dannie Mullen

4. Sample Description: Drop Box-4 Drop Box #165

5. Sent To: ✓ North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

___ Wacker's Analytical Laboratory

___ _____

6. Analyses Required: TCLP-8240 - TPH-D

7. Chain of Custody Submitted; (Yes) No

8. Purchase Order Number: 30381

10. Cost (or estimate): _____

11. Results Received On: _____

12. Additional Notes; _____

TJR 15 Nov 91
TJR 01 Nov 91

NORTH CREEK ANALYTICAL

18939 120th Avenue N.E., Suite 101 • Bothell, WA 98011-9508 (206) 481-9200 • FAX 485-2992
East 11115 Montgomery, Suite B • Spokane, WA 99206-4776 (509) 924-9200 • FAX 924-9290
9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

RECEIVED JAN 6 1995

December 28, 1994

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullen c/o Tom Rothschild

RE: JOB # DROP BOX-4#165
P.O.# 31002
PROJECT - FAB-2

Enclosed are test results for your samples received in this lab on Dec. 22, 1994. For your reference, these analyses have been assigned our NCA # 94-3980.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

Please call if you have any questions.

Respectfully,

Howard Holmes
Project Manager

NORTH CREEK ANALYTICAL

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RECEIVED JAN 6 1995

TPH-D per Oregon DEQ
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: 94-3980
Matrix: soil
Sampled: 12/22/1994
Received: 12/22/1994

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
94-503	94-3980-1	Diesel/related	6,300	250	12/22/94	12/22/94
Method Blank		Diesel/related	ND	25		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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TCLP VOC's per EPA 1311, 8240
Results In mg/L (ppm)

RECEIVED JAN 6 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: 94-3980
Matrix: soil
Received: 12/22/1994
Sampled: 12/22/1994
Extracted: 12/23/94
Prepared: 12/27/94
Analyzed: 12/27/94

Client ID	Lab ID	Analyte	Result	MRL
94-503	94-3980-1	Benzene	0.060	0.0040
		Carbon Tetrachloride	ND	0.0040
		Chlorobenzene	ND	0.0040
		Chloroform	ND	0.0040
		1,4-Dichlorobenzene	ND	0.0040
		1,2-Dichloroethane	ND	0.0040
		1,1-Dichloroethene	ND	0.0040
		Methyl Ethyl Ketone	ND	0.015
		Tetrachloroethene	ND	0.0040
		Trichloroethene	ND	0.0080
		Vinyl Chloride	ND	0.010
Method Blank		Benzene	ND	0.0020
		Carbon Tetrachloride	ND	0.0020
		Chlorobenzene	ND	0.0020
		Chloroform	ND	0.0020
		1,4-Dichlorobenzene	ND	0.0020
		1,2-Dichloroethane	ND	0.0020
		1,1-Dichloroethene	ND	0.0020
		Methyl Ethyl Ketone	ND	0.0075
		Tetrachloroethene	ND	0.0020
		Trichloroethene	ND	0.0040
		Vinyl Chloride	ND	0.0050

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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SURROGATE RECOVERIES (%)

RECEIVED JAN 6 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: 94-3980
Received: 12/22/1994

Sample Name	Analyte	Result	Control Limits
TPH-D per Oregon DEQ			
94-503	1-Chlorooctadecane	90	50-150
TCLP VOC's per EPA 1311, 8240			
94-503	4-Bromofluorobenzene	101	74-121
	1,2-Dichloroethane-d4	89	70-121
	Toluene-d8	100	81-117

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

NORTH CREEK ANALYTICAL

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East 11115 Montgomery, Suite B, Spokane, WA 98206-4779 (509) 924-9200 FAX 924-9290
15055 S.W. Sequoia Parkway, Suite 110, Portland, OR 97224-7155 (503) 624-9800 FAX 684-3782

CHAIN OF CUSTODY REPORT

RECEIVED JAN 6 1995

CLIENT: Wacker Siltronic
ADDRESS: 7200 N. W. Front Ave
Portland, OR
PHONE: 243-2020 x-374 FAX: 241-7599

REPORT TO: Dianne Mullen c/o Tom Rothschild
BILLING TO:
P.O. NUMBER: 30381
NCA QUOTE #:

SAME DAY RUSH	(+150%)	X
NEXT BUSINESS DAY RUSH	(+100%)	
2 BUSINESS DAY RUSH	(+80%)	
3 BUSINESS DAY RUSH	(+60%)	
5 BUSINESS DAY RUSH	(+40%)	
10 BUSINESS DAY STANDARD	(LIST PRICE)	
5 BUS. DAY HYDROCARBONS	(LIST PRICE)	

PROJECT NAME: FAB-2
PROJECT NUMBER: Drop Box - 4 #165
SAMPLED BY: Justin Darr, Dianne Mullen

Analysis Request: TCLP 8240 / TPH-D

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	TCLP 8240	TPH-D	COMMENTS & PRESERVATIVES USED	NORTH CREEK SAMPLE NUMBER
1. 94-503	12/22/94/1315	S	3	X	X	held on ice	94-3980
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							

RELINQUISHED BY: Dianne Mullen	DATE: 12-22-94	RECEIVED BY: A. Pedersen	DATE: 12/22/94
FIRM: Wacker Siltronic	TIME: 1545	FIRM:	TIME: 1545
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
FIRM:	TIME:	FIRM:	TIME:

ADDITIONAL REMARKS:

PAGE 1 OF 1

SCOEPA00019083

FAB
SAMPLES SENT TO OUTSIDE LABORATORY

1. WSC# (500 - #): 94-504

2. Date/Time of Sample: 12-22-94 / 1315

3. Name of Sampler: Justin Darr, Deanna Muller

4. Sample Description: Drop box - 5 #763

5. Sent To: ✓ North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

___ Wacker's Analytical Laboratory

___

6. Analyses Required: PAHS - ~~Oregon~~ 8310, TCLP-8240
TPH-D

7. Chain of Custody Submitted; (Yes) No

8. Purchase Order Number: 30381

10. Cost (or estimate): _____

11. Results Received On: _____

12. Additional Notes; ~~PA~~

TJR 15 Nov 91
TJR 01 Nov 91
DEM 19 Dec 94

NORTH CREEK ANALYTICAL

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

December 30, 1994

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan/Tom Rothschild

RE: JOB # BOX-5 #163
P.O.# 31002
PROJECT - FAB-2

Enclosed are test results for your samples received in this lab on Dec. 22, 1994. For your reference, these analyses have been assigned our NCA # 94-3979.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

Please call if you have any questions.

Respectfully,

Howard Holmes
Project Manager

NORTH CREEK ANALYTICAL

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TPH-D per Oregon DEQ
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: 94-3979
Matrix: soil
Sampled: 12/22/1994
Received: 12/22/1994

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
94-504	94-3979-1	Diesel/related	27,000	1300	12/22/94	12/23/94
Method Blank		Diesel/related	ND	25		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019086

NORTH CREEK ANALYTICAL

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TCLP VOC's per EPA 1311, 8240

Results In mg/L (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: 94-3979
Matrix: soil
Sampled: 12/22/1994
Received: 12/22/1994

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
94-504	94-3979-1	Benzene	0.90	0.040	12/27/94	12/27/94
		Carbon Tetrachloride	ND	0.040		
		Chlorobenzene	ND	0.040		
		Chloroform	ND	0.040		
		1,4-Dichlorobenzene	ND	0.040		
		1,2-Dichloroethane	ND	0.040		
		1,1-Dichloroethene	ND	0.040		
		Methyl Ethyl Ketone	ND	0.15		
		Tetrachloroethene	ND	0.040		
		Trichloroethene	ND	0.080		
		Vinyl Chloride	ND	0.10		
Method Blank		Benzene	ND	0.0020		
		Carbon Tetrachloride	ND	0.0020		
		Chlorobenzene	ND	0.0020		
		Chloroform	ND	0.0020		
		1,4-Dichlorobenzene	ND	0.0020		
		1,2-Dichloroethane	ND	0.0020		
		1,1-Dichloroethene	ND	0.0020		
		Methyl Ethyl Ketone	ND	0.0075		
		Tetrachloroethene	ND	0.0020		
		Trichloroethene	ND	0.0040		
		Vinyl Chloride	ND	0.0050		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019087

NORTH CREEK ANALYTICAL

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PAH'S by EPA 8310
Results In ug/kg (ppb)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: 94-3979
Matrix: soil
Sampled: 12/22/1994
Received: 12/22/1994

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
94-504 *[1]	94-3979-1	Acenaphthene	820000	340000	12/23/94	12/28/94
		Acenaphthylene	ND	650000		
		Anthracene	380000	34000		
		Benzo(a)anthracene	230000	34000		
		Benzo(a)pyrene	180000	34000		
		Benzo(b)fluoranthene	120000	34000		
		Benzo(g,h,i)perylene	140000	34000		
		Benzo(k)fluoranthene	69000	34000		
		Chrysene	250000	34000		
		Dibenzo(a,h)anthracene	ND	34000		
		Fluoranthene	760000	65000		
		Fluorene	390000	65000		
		Indeno(1,2,3-cd)pyrene	98000	34000		
		Naphthalene	3100000	340000		
		Phenanthrene	1100000	34000		
		Pyrene	ND	34000		
Method Blank		Acenaphthene	ND	67		
		Acenaphthylene	ND	130		
		Anthracene	ND	6.7		
		Benzo(a)anthracene	ND	6.7		
		Benzo(a)pyrene	ND	6.7		
		Benzo(b)fluoranthene	ND	6.7		
		Benzo(g,h,i)perylene	ND	6.7		
		Benzo(k)fluoranthene	ND	6.7		
		Chrysene	ND	6.7		
		Dibenzo(a,h)anthracene	ND	6.7		
		Fluoranthene	ND	13		
		Fluorene	ND	13		
		Indeno(1,2,3-cd)pyrene	ND	6.7		
		Naphthalene	ND	67		
		Phenanthrene	ND	6.7		
		Pyrene	ND	6.7		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019088

NORTH CREEK ANALYTICAL

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SURROGATE RECOVERIES (%)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: 94-3979
Received: 12/22/1994

Sample Name	Analyte	Result	Control Limits
TPH-D per Oregon DEQ			
94-504	1-Chlorooctadecane	-- *2	50-150
TCLP VOC's per EPA 1311, 8240			
94-504	4-Bromofluorobenzene	99	74-121
	1,2-Dichloroethane-d4	88	70-121
	Toluene-d8	96	81-117
PAH'S by EPA 8310			
94-504	Decafluorobiphenyl	--- *2	50-150

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019089

NORTH CREEK ANALYTICAL

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COMMENTS

Client:	Wacker Siltronic Corporation	NCA Number:	94-3979
Project:	FAB-2	**Received:**	12/22/1994

1. Detection limit is raised due to dilution necessary for analysis.

2. Unable to calculate surrogate recovery due to dilution necessary for analysis.

SCOEPA00019090

NORTH CREEK ANALYTICAL

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15055 S.W. Sequoia Parkway, Suite 110, Portland, OR 97224-7155 (503) 624-9800 FAX 684-3782

CHAIN OF CUSTODY REPORT

CLIENT: Wacker Siltronic
ADDRESS: 7200 N. W. Front Ave. Portland, OR
PHONE: 243-2020 x-374 FAX: 241-7599

REPORT TO: Dianne Mullan c/o Tom Rothschild
BILLING TO:
P.O. NUMBER: 30381
NCA QUOTE #:

SAME DAY RUSH	(+150%)	X
NEXT BUSINESS DAY RUSH	(+100%)	
2 BUSINESS DAY RUSH	(+80%)	
3 BUSINESS DAY RUSH	(+60%)	
5 BUSINESS DAY RUSH	(+40%)	
10 BUSINESS DAY STANDARD	(LIST PRICE)	
5 BUS. DAY HYDROCARBONS	(LIST PRICE)	

PROJECT NAME: FAB-2
PROJECT NUMBER: BOX-5 #163
SAMPLED BY: Justin Darr, Dianne Mullan

Analysis Request: PAH 5-8310 / TCLP 8240 / TPH-D

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	PAH 5-8310	TCLP 8240	TPH-D	COMMENTS & PRESERVATIVES USED	NORTH CREEK SAMPLE NUMBER
1. 94-504	12/22/94/1315	S	3	X	X	X	held on ice	94-3979
2.								
3.								
4.								
5.								
6.								
7.								
8.								
9.								
10.								

RELINQUISHED BY: Dianne Mullan	DATE: 12-22-94	RECEIVED BY: S C Tedersen	DATE: 12/22/94
FIRM: Wacker Siltronic	TIME: 1545	FIRM:	TIME: 1545
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
FIRM:	TIME:	FIRM:	TIME:

ADDITIONAL REMARKS:

PAGE OF

SCOEPA00019091

SAMPLES SENT TO OUTSIDE LABORATORY
FAB-2

1. WSC#: 95-514

2. Date/Time of Sample: 1-10-95 / 1315

3. Name of Sampler: George Stevens, Dannie Mullen

4. Sample Discription: Drop Box 5 ID# 163

Other _____

5. Sent To: X North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

6. Analyses Required: TCLP (8) metals

7. Chain of Custody Submitted; Yes No

8. Purchase Order Number: 31002

9. Final Results Received On: /

10. Additional Notes; _____

TJR 15 Nov 91
TJR 01 Nov 91
DEM 05 Jan 95

NORTH CREEK ANALYTICAL

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

RECEIVED JAN 1 9 1995

January 12, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

RE: JOB # DROP BOX 5
P.O.# 31002
PROJECT - FAB-2

Enclosed are test results for your samples received in this lab on Jan. 10, 1995. For your reference, these analyses have been assigned our NCA # P501096.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

Please call if you have any questions.

Respectfully,

Howard Holmes
Project Manager

NORTH CREEK ANALYTICAL

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TCLP per EPA 1311, 6010, 7000 series

Results In mg/L (ppm)

RECEIVED JAN 1 9 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501096
Matrix: soil
Sampled: 01/10/1995
Received: 01/10/1995

Client ID	Lab ID	Analyte	Result	MRL	Date Extracted	Date Prepared	Date Analyzed
95-514-(BOX-5)	P501096-1	Arsenic	ND	0.50	01/10/95	01/11/95	01/11/95
		Barium	0.59	0.50			
		Cadmium	ND	0.020			
		Chromium	ND	0.020			
		Lead	ND	0.20			
		Mercury	ND	0.010			
		Selenium	ND	0.25			
		Silver	ND	0.020			
Method Blank		Arsenic	ND	0.50			
		Barium	ND	0.50			
		Cadmium	ND	0.020			
		Chromium	ND	0.020			
		Lead	ND	0.20			
		Mercury	ND	0.00050			
		Selenium	ND	0.25			
		Silver	ND	0.020			

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

NORTH CREEK ANALYTICAL

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

RECEIVED JAN 1 9 1995

January 13, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

Re: Requested Quality Control Data

Enclosed is the in-house quality control data you requested on NCA project number P501096.

Note: Method blank results and Surrogate Recoveries are included in the final report.

QUALITY CONTROL DEFINITIONS

METHOD BLANK RESULTS

A Method Blank is a laboratory-generated sample which assesses the degree to which laboratory operations and procedures cause false-positive analytical results for your sample.

No target parameters were detected in the method blank associated with your sample at the reporting limit levels noted on the data sheets in the final report.

SURROGATE STANDARD

A surrogate standard (i.e., a chemical compound not expected to occur in an environmental sample) is added to each sample, blank, and matrix spike sample just prior to extraction or processing. The recovery of the surrogate standard is used to monitor for unusual matrix effects, gross sample processing errors, etc. Surrogate recovery is evaluated for acceptance by determining whether the measured concentration falls within accepted limits.

NORTH CREEK ANALYTICAL

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

Accuracy is measured by percent recovery as in:

$$\% \text{ Recovery} = \frac{\text{(Measured Concentration)}}{\text{(Actual Concentration)}} \times 100$$

Precision is measured using duplicate tests by relative percent difference.

$$\text{RPD} = \frac{\text{(Result of Test 1 - Result of Test 2)}}{\text{(Result of Test 1 + Result of Test 2)/2}} \times 100$$

If you should have any questions concerning this report, please contact me.

Sincerely,

Howard Holmes
Project Manager

NORTH CREEK ANALYTICAL

18939 120th Avenue N.E., Suite 101 • Bothell, WA 98011-9508 (206) 481-9200 • FAX 485-2992
East 11115 Montgomery, Suite B • Spokane, WA 99206-4776 (509) 924-9200 • FAX 924-9290
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BATCH QUALITY CONTROL RESULTS
TCLP per EPA 1311, 6010, 7000 series

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501096
Received: 01/10/1995

METHOD BLANK
Batch # KR95006a
Results In mg/L (ppm)

Compound	Result	MRL
Arsenic	ND	0.50
Barium	ND	0.50
Cadmium	ND	0.020
Chromium	ND	0.020
Lead	ND	0.20
Selenium	ND	0.25
Silver	ND	0.020
Date Extracted	01/10/1995	
Date Prepared	01/11/1995	
Date Analyzed	01/11/1995	

MATRIX SPIKE
Batch # KR95006a **Spike ID P501096-1**
Results In mg/L (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS % Rec	QC Limit % Rec
Arsenic	5.0	ND	5.4	108	50-150
Barium	10	0.59	9.8	92	50-150
Cadmium	1.0	ND	1.0	100	50-150
Chromium	5.0	ND	5.1	102	50-150
Lead	5.0	ND	5.2	104	50-150
Selenium	1.0	ND	1.0	100	50-150
Silver	2.0	ND	1.8	90	50-150

SCOEPA00019097

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BATCH QUALITY CONTROL RESULTS
TCLP per EPA 1311, 6010, 7000 series

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501096
Received: 01/10/1995

RECEIVED JAN 1 9 1995

LABORATORY CONTROL SAMPLE
Batch # KR95006a
Results In mg/L (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Arsenic	5.0	5.3	106	50-150
Barium	10	9.4	94	50-150
Cadmium	1.0	0.99	99	50-150
Chromium	5.0	5.2	104	50-150
Lead	5.0	5.1	102	50-150
Selenium	1.0	1.1	110	50-150
Silver	2.0	1.8	90	50-150

SCOEPA00019098

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BATCH QUALITY CONTROL RESULTS
TCLP per EPA 1311, 6010, 7000 series

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501096
Received: 01/10/1995

RECEIVED JAN 1 9 1995

METHOD BLANK
Batch # ZT95007a
Results In mg/L (ppm)

Compound	Result	MRL
Mercury	ND	0.00050
Date Extracted	01/10/1995	
Date Prepared	01/11/1995	
Date Analyzed	01/11/1995	

MATRIX SPIKE
Batch # ZT95007a **Spike ID P501096-1**
Results In mg/L (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS % Rec	QC Limit % Rec
Mercury	0.10	ND	0.093	93	50-150

LABORATORY CONTROL SAMPLE
Batch # ZT95007a
Results In mg/L (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Mercury	0.0050	0.0048	96	50-150

SCOEPA00019099

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East 11115 Montgomery, Suite B, Spokane, WA 98206-4779 (509) 924-9200 FAX 924-9290
15055 S.W. Sequoia Parkway, Suite 110, Portland, OR 97224-7155 (503) 624-9800 FAX 684-3782

CHAIN OF CUSTODY REPORT

CLIENT: Wacker Siltronic
ADDRESS: 7200 N.W. Front Ave
Portland, OR
PHONE: 243-2020 x-374 FAX: 241-7599

REPORT TO: Dianne Mullan
BILLING TO:
P.O. NUMBER: 31002
NCA QUOTE #:

SAME DAY RUSH	(+150%)	X
NEXT BUSINESS DAY RUSH	(+100%)	
2 BUSINESS DAY RUSH	(+80%)	
3 BUSINESS DAY RUSH	(+60%)	
5 BUSINESS DAY RUSH	(+40%)	
10 BUSINESS DAY STANDARD	(LIST PRICE)	
5 BUS. DAY HYDROCARBONS	(LIST PRICE)	

PROJECT NAME: FAB-2
PROJECT NUMBER: Drop Box 5
SAMPLED BY: George Steven / D. Mullan

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	Analysis Request: TCLP(8) metals	COMMENTS & PRESERVATIVES USED	NORTH CREEK SAMPLE NUMBER
1. 95-514 - (Box-5)	1-10-95/1315	S	2	X	held on ice	P501096
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						

RELINQUISHED BY: Dianne Mullan	DATE: 1/10/95	RECEIVED BY: Sara McClurg	DATE: 1-10-95
FIRM: Wacker Siltronic	TIME: 1530	FIRM: Sara McClurg	TIME: 1530
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
FIRM:	TIME:	FIRM:	TIME:

ADDITIONAL REMARKS:

PAGE OF

SCOEPA00019100

SAMPLES SENT TO OUTSIDE LABORATORY

FAB-2

1. WSC#: 95-5024

2. Date/Time of Sample: 1-19-94 / 1015

3. Name of Sampler: Dianne Mullen

4. Sample Discription: Drop Box 5 ID# 163

Other _____

5. Sent To: X North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

6. Analyses Required: ~~PPB's~~ PCB's Next day

7. Chain of Custody Submitted; (Yes) No

8. Purchase Order Number: _____

9. Final Results Received On: _____

10. Additional Notes; _____

TJR 15 Nov 91
TJR 01 Nov 91
DEM 05 Jan 95

NORTH CREEK ANALYTICAL

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

January 25, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

RE: JOB # BOX-5
P.O.# 31002
PROJECT - FAB-2

Enclosed are test results for your samples received in this lab on Jan. 19, 1995. For your reference, these analyses have been assigned our NCA # P501199.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

Please call if you have any questions.

Respectfully,

Howard Holmes
Project Manager

NORTH CREEK ANALYTICAL

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

PCB's per EPA 8080
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501199
Matrix: soil
Sampled: 01/19/1995
Received: 01/19/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-524 *[1]	P501199-1	PCB 1016	ND	0.10	01/19/95	01/20/95
		PCB 1221	ND	0.30		
		PCB 1232	ND	0.40		
		PCB 1242	ND	0.10		
		PCB 1248	ND	0.15		
		PCB 1254	ND	0.15		
		PCB 1260	ND	0.15		
Method Blank		PCB 1016	ND	0.050		
		PCB 1221	ND	0.10		
		PCB 1232	ND	0.050		
		PCB 1242	ND	0.050		
		PCB 1248	ND	0.050		
		PCB 1254	ND	0.050		
		PCB 1260	ND	0.050		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019103

NORTH CREEK ANALYTICAL

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

SURROGATE RECOVERIES (%)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P501199
Received: 01/19/1995

Sample Name	Analyte	Result	Control Limits
PCB's per EPA 8080			
95-524	Decachlorobiphenyl	94	43-139
	2,4,5,6-Tetrachloro-m-xylene	124	42-137

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

COMMENTS

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P501199
Received: 01/19/1995

1. Detection limit is raised due to matrix interference.

SCOEPA00019105

NORTH CREEK ANALYTICAL

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

January 25, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

Re: Requested Quality Control Data

Enclosed is the in-house quality control data you requested on NCA project number P501199.

Note: Method blank results and Surrogate Recoveries are included in the final report.

QUALITY CONTROL DEFINITIONS

METHOD BLANK RESULTS

A Method Blank is a laboratory-generated sample which assesses the degree to which laboratory operations and procedures cause false-positive analytical results for your sample.

No target parameters were detected in the method blank associated with your sample at the reporting limit levels noted on the data sheets in the final report.

SURROGATE STANDARD

A surrogate standard (i.e., a chemical compound not expected to occur in an environmental sample) is added to each sample, blank, and matrix spike sample just prior to extraction or processing. The recovery of the surrogate standard is used to monitor for unusual matrix effects, gross sample processing errors, etc. Surrogate recovery is evaluated for acceptance by determining whether the measured concentration falls within accepted limits.

NORTH CREEK ANALYTICAL

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Accuracy is measured by percent recovery as in:

$$\% \text{ Recovery} = \frac{\text{(Measured Concentration)}}{\text{(Actual Concentration)}} \times 100$$

Precision is measured using duplicate tests by relative percent difference.

$$\text{RPD} = \frac{\text{(Result of Test 1 - Result of Test 2)}}{\text{(Result of Test 1 + Result of Test 2)/2}} \times 100$$

If you should have any questions concerning this report, please contact me.

Sincerely,

Howard Holmes
Project Manager

NORTH CREEK ANALYTICAL
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BATCH QUALITY CONTROL RESULTS
PCB's per EPA 8080

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P501199
Received: 01/19/1995

METHOD BLANK
Batch # PN95003a
Results In ug/kg (ppm)

Compound	Result	MRL
PCB 1016	ND	0.050
PCB 1221	ND	0.10
PCB 1232	ND	0.050
PCB 1242	ND	0.050
PCB 1248	ND	0.050
PCB 1254	ND	0.050
PCB 1260	ND	0.050
Date Prepared	01/19/1995	
Date Analyzed	01/20/1995	

Surrogate Recovery (%)		Control Limit
Decachlorobiphenyl	112	43-129
2,4,5,6-Tetrachloro-m-xylene	104	42-137

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # PN95003a
Results In ug/kg (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS %Rec
PCB 1016	0.33	ND	0.32	97
PCB 1260	0.33	ND	0.37	112

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
PCB 1016	0.33	0.39	118	20	50	60-149
PCB 1260	0.33	0.42	127	13	50	70-137

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

BATCH QUALITY CONTROL RESULTS
PCB's per EPA 8080

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P501199
Received: 01/19/1995

LABORATORY CONTROL SAMPLE
Batch # PN95003a
Results In ug/kg (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
PCB 1016	0.33	0.34	103	83-130
PCB 1260	0.33	0.38	115	69-140

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9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202

CHAIN OF CUSTODY REPORT

CLIENT: Wacker Siltronic
ADDRESS: 7200 N.W. Front Ave Portland OR
PHONE: 243-2020 x-374 FAX: 241-7599

REPORT TO: Dianne Mullan
BILLING TO:
P.O. NUMBER: 31002
NCA QUOTE #:

PROJECT NAME: PA13-2
PROJECT NUMBER: Box-5
SAMPLED BY:

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: 10 | 5 | 3 | 2 | X

(Please Select One)

Fuels & Hydrocarbon Analyses: 5 | 3 | 2 | 1

** Turnaround Requests less than standard will incur Rush Charges.*

FAX RESULTS BY :

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	Analysis Request: PCBs (8081)	COMMENTS & PRESERVATIVES USED	NCA SAMPLE NUMBER
1. 95-524	1/19/95/1015	S	2	X	held on ice	P501199-1
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						

RELINQUISHED BY: Dianne Mullan	DATE: 1-19-95	RECEIVED BY: EK Schmeltzer	DATE: 1-19-95
PRINT NAME: Dianne Mullan FIRM: Wacker Siltronic	TIME: 1055	PRINT NAME: EK Schmeltzer FIRM: NCA	TIME: 1055
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
PRINT NAME: FIRM:	TIME:	PRINT NAME: FIRM:	TIME:

ADDITIONAL REMARKS:

PAGE OF

COC Rev 6, 10/94

SCOEPA00019110

NORTH CREEK ANALYTICAL

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9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202

CHAIN OF CUSTODY REPORT

CLIENT: Wacker Siltronic
ADDRESS: 7200 N.W. Front Ave Portland OR
PHONE: 243-2020x-374 FAX: 241-7599

REPORT TO: Dianne Mullan
BILLING TO:
P.O. NUMBER: 31002
NCA QUOTE #:

PROJECT NAME: PAB-2
PROJECT NUMBER: Box-5
SAMPLED BY:

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: 10 | 5 | 3 | 2 | X

(Please Select One)

Fuels & Hydrocarbon Analyses: 5 | 3 | 2 | 1

* Turnaround Requests less than standard will incur Rush Charg

FAX RESULTS BY :

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	PCB's (8081)	COMMENTS & PRESERVATIVES USED	NCA SAMPLE NUMBER
1. 95-524	1/19/95/1015	S	2	X	held on ice	P501199-1
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						

RELINQUISHED BY: Dianne Mullan	DATE: 1-19-95	RECEIVED BY: EK Schmeltzer	DATE: 1-19-95
PRINT NAME: Dianne Mullan FIRM: Wacker Siltronic	TIME: 1055	PRINT NAME: EK Schmeltzer FIRM: NCA	TIME: 1055
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
PRINT NAME: FIRM:	TIME:	PRINT NAME: FIRM:	TIME:

ADDITIONAL REMARKS:

PAGE OF

COC Rev 6, 10/94

SCOEPA00019111

SAMPLES SENT TO OUTSIDE LABORATORY
FAB-2

1. WSC#: 95-526

2. Date/Time of Sample: 1-25-95 / 1050

3. Name of Sampler: Gary Kent, Dianne Mullan

4. Sample Discription: Drop Box 5 ID# 163

Other _____

5. Sent To: ✓ North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

___ _____

_____

_____

6. Analyses Required: VOCLP-8240

_____

7. Chain of Custody Submitted; Yes No

8. Purchase Order Number: 31002

9. Final Results Received On: _____

10. Additional Notes; sample sent out on 1-26-95 DM

_____

_____

_____

_____

TJR 15 Nov 91
TJR 01 Nov 91
DEM 05 Jan 95

NORTH CREEK ANALYTICAL

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

RECEIVED FEB 6 1995

January 30, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

RE: JOB # BOX-5
P.O.# 31002
PROJECT - FAB-2

Enclosed are test results for your samples received in this lab on Jan. 25, 1995. For your reference, these analyses have been assigned our NCA # P501258.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

Please call if you have any questions.

Respectfully,

Howard Holmes
Project Manager

RECEIVED FEB 6 1995

NORTH CREEK ANALYTICAL

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

TCLP VOC's per EPA 8240
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501258
Matrix: soil
Sampled: 01/25/1995
Received: 01/25/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-526-BOX 5	P501258-1	Benzene	0.90	0.25	01/26/95	01/26/95
		Carbon Tetrachloride	ND	0.25		
		Chlorobenzene	ND	0.25		
		Chloroform	ND	0.25		
		1,4-Dichlorobenzene	ND	0.25		
		1,2-Dichloroethane	ND	0.25		
		1,1-Dichloroethene	ND	0.25		
		Methyl Ethyl Ketone	2.2	0.94		
		Tetrachloroethene	ND	0.25		
		Trichloroethene	ND	0.25		
		Vinyl Chloride	ND	0.63		
Method Blank		Benzene	ND	0.25		
		Carbon Tetrachloride	ND	0.25		
		Chlorobenzene	ND	0.25		
		Chloroform	ND	0.25		
		1,4-Dichlorobenzene	ND	0.25		
		1,2-Dichloroethane	ND	0.25		
		1,1-Dichloroethene	ND	0.25		
		Methyl Ethyl Ketone	ND	0.94		
		Tetrachloroethene	ND	0.25		
		Trichloroethene	ND	0.25		
		Vinyl Chloride	ND	0.63		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

RECEIVED FEB 6 1995

NORTH CREEK ANALYTICAL

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

SURROGATE RECOVERIES (%)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P501258
Received: 01/25/1995

Sample Name	Analyte	Result	Control Limits
TCLP VOC's per EPA 1311, 8240			
95-526-BOX 5	4-Bromofluorobenzene	95	74-121
	1,2-Dichloroethane-d4	84	70-121
	Toluene-d8	97	81-117

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019115

NORTH CREEK ANALYTICAL

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FEB 6 1995

January 30, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

Re: Requested Quality Control Data

Enclosed is the in-house quality control data you requested on NCA project number P501258.

Note: Method blank results and Surrogate Recoveries are included in the final report.

QUALITY CONTROL DEFINITIONS

METHOD BLANK RESULTS

A Method Blank is a laboratory-generated sample which assesses the degree to which laboratory operations and procedures cause false-positive analytical results for your sample.

No target parameters were detected in the method blank associated with your sample at the reporting limit levels noted on the data sheets in the final report.

SURROGATE STANDARD

A surrogate standard (i.e., a chemical compound not expected to occur in an environmental sample) is added to each sample, blank, and matrix spike sample just prior to extraction or processing. The recovery of the surrogate standard is used to monitor for unusual matrix effects, gross sample processing errors, etc. Surrogate recovery is evaluated for acceptance by determining whether the measured concentration falls within accepted limits.

NORTH CREEK ANALYTICAL

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

RECEIVED FEB 3

Accuracy is measured by percent recovery as in:

$$\% \text{ Recovery} = \frac{\text{(Measured Concentration)}}{\text{(Actual Concentration)}} \times 100$$

Precision is measured using duplicate tests by relative percent difference.

$$\text{RPD} = \frac{\text{(Result of Test 1 - Result of Test 2)}}{\text{(Result of Test 1 + Result of Test 2)/2}} \times 100$$

If you should have any questions concerning this report, please contact me.

Sincerely,

Howard Holmes
Project Manager

NORTH CREEK ANALYTICAL

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

RECEIVED FEB 6 1995

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P501258
Received: 01/25/1995

METHOD BLANK
Batch # VE95003b
Results In mg/kg (ppm)

Compound	Result	MRL
Benzene	ND	0.25
Carbon Tetrachloride	ND	0.25
Chlorobenzene	ND	0.25
Chloroform	ND	0.25
1,4-Dichlorobenzene	ND	0.25
1,2-Dichloroethane	ND	0.25
1,1-Dichloroethene	ND	0.25
Methyl Ethyl Ketone	ND	0.94
Tetrachloroethene	ND	0.25
Trichloroethene	ND	0.25
Vinyl Chloride	ND	0.63
Date Prepared	01/26/1995	
Date Analyzed	01/26/1995	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	98	74-121
1,2-Dichloroethane-d4	86	70-121
Toluene-d8	98	81-117

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

RECEIVED FEB 6 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501258
Received: 01/25/1995

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # VE95003a **Spike ID P501226-1**
Results In mg/kg (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS %Rec
Benzene	2.50	ND	2.44	98
Chlorobenzene	2.50	ND	2.30	92
1,1-Dichloroethene	2.50	ND	2.43	97
Toluene	2.50	ND	2.48	99
Trichloroethene	2.50	ND	2.93	117

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
Benzene	2.50	2.56	102	4.0	21	66-142
Chlorobenzene	2.50	2.43	97	5.3	21	60-133
1,1-Dichloroethene	2.50	2.70	108	11	22	59-172
Toluene	2.50	2.64	106	6.8	21	59-139
Trichloroethene	2.50	2.46	98	18	24	62-137

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CHAIN OF CUSTODY REPORT

RECEIVED FEB 0 1995

CLIENT: Wacker Siltronic
ADDRESS: 7200 N.W. FRONT AVE Portland OR
PHONE: 243-2020 X-374 FAX: 241-7599

REPORT TO: Dianne Mullan
BILLING TO:
P.O. NUMBER: 31002
NCA QUOTE #:

PROJECT NAME: FAB-2
PROJECT NUMBER: BOX-5
SAMPLED BY: Gary Kent, Dianne Mullan

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: 10 | 5 | 3 | 2 | X

(Please Select One)

Fuels & Hydrocarbon Analyses: 5 | 3 | 2 | 1

* Turnaround Requests less than standard will incur Rush Charge

FAX RESULTS BY :

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	Analysis Request: TCLP-8240	COMMENTS & PRESERVATIVES USED	NCA SAMPLE NUMBER
1. 95-526-BOX-5	1/25/95 1050	S	1	X	heldon	P501258
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						

RELINQUISHED BY: Dianne Mullan DATE: 1-26-95
PRINT NAME: Dianne Mullan FIRM: Wacker Siltronic TIME: 1000

RECEIVED BY: [illegible] DATE: 1/26/95
PRINT NAME: FIRM: NCA TIME: 1000

RELINQUISHED BY: DATE:
PRINT NAME: FIRM: TIME:

RECEIVED BY: [illegible] DATE: 1/26/95
PRINT NAME: FIRM: NCA TIME: 1105

ADDITIONAL REMARKS:

PAGE OF

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SCOEPA00019120

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9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202

CHAIN OF CUSTODY REPORT

RECEIVED FEB 6 1995

CLIENT: Wacker Siltronic
ADDRESS: 7200 N.W. Front Ave Portland, OR
PHONE: 243-2020 X-374 FAX:

REPORT TO: Dianne Mullan
BILLING TO:
P.O. NUMBER: 32001
NCA QUOTE #:

PROJECT NAME: FAB-2
PROJECT NUMBER: Box's
SAMPLED BY: Gary Kent Dianne Mullan

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: 10 | 5 | 3 | 2 | 1 (Please Select One)

Fuels & Hydrocarbon Analyses: 5 | 3 | 2 | 1

* Turnaround Requests less than standard will incur Rush Charg

FAX RESULTS BY :

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	TCLP 8240	TPH-D	COMMENTS & PRESERVATIVES USED	NCA SAMPLE NUMBER
1. 95-526 - Box 5	1-25-95/1050	S	1	X	—		P501258-1
2. 95-527 - Box 6	1115	S	1	X			P501259-1
3. 95-528 - Box-22	1130	S	2	X	X		P501260-1
4. 95-529 - Box-24	1145	S	2	X	X		P501261-1
5. 95-530 - Box-25	1200	S	2	X	X		P501262-1
6. 95-531 - Box-26	1245	S	2	X	X		P501263-1
7. 95-532 - Box-27	1300	S	2	X	X		P501264-1
8. 95-525 - Box-28	1040	S	2	X	X		P501265-1
9.							
10.							

Initials on ice

RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
Dianne Mullan	1-25-95	Sara McClurg	1-25-95
PRINT NAME: Dianne Mullan FIRM: Wacker Siltronic	TIME: 1655	PRINT NAME: Sara McClurg FIRM: NCA	TIME: 1655
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
PRINT NAME: FIRM:	TIME:	PRINT NAME: FIRM:	TIME:

ADDITIONAL REMARKS:
#1 sample was left at Wacker - new chain of custody brought with sample on 1-26-95

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SCOEPA00019121

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9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202

CHAIN OF CUSTODY REPORT

CLIENT: Wacker Siltronic
ADDRESS: 7200 N.W. FRONT AVE Portland OR
PHONE: 243-2020 X-374 FAX: 241-7599

REPORT TO: Dianne Mullan
BILLING TO:
P.O. NUMBER: 31002
NCA QUOTE #:

PROJECT NAME: FAB-2
PROJECT NUMBER: BOX-5
SAMPLED BY: Mary Kent, Dianne Mullan

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: 10 | 5 | 3 | 2 | X

(Please Select One)

Fuels & Hydrocarbon Analyses: 5 | 3 | 2 | 1

** Turnaround Requests less than standard will incur Rush Charges.*

FAX RESULTS BY :

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	Analysis Request: TCLP-8240	COMMENTS & PRESERVATIVES USED	NCA SAMPLE NUMBER
1. 95-526-BOX-5	1/25/95 1050	S	1	X	heldon la	
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						

RELINQUISHED BY: Dianne Mullan		DATE: 1-26-95	RECEIVED BY: [illegible]		DATE: 1/26/95
PRINT NAME: Dianne Mullan	FIRM: Wacker Siltronic	TIME: 1000	PRINT NAME:	FIRM: NCA	TIME: 1000
RELINQUISHED BY:		DATE:	RECEIVED BY:		DATE:
PRINT NAME:	FIRM:	TIME:	PRINT NAME:	FIRM:	TIME:

ADDITIONAL REMARKS:

PAGE OF

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SCOEPA00019122

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9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202

CHAIN OF CUSTODY REPORT

CLIENT: Wacker Siltronic

ADDRESS: 7200 N.W. Front Ave
Portland OR

PHONE: 243-2020 x374 FAX: 241-7599

PROJECT NAME: FAB-2

PROJECT NUMBER: Boxes

SAMPLED BY: Dianne Mullan, Gary Kent

REPORT TO: Dianne Mullan

BILLING TO:

P.O. NUMBER: 31002

NCA QUOTE #:

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: 10 | 5 | 3 | 2 | 1

(Please Select One)

Fuels & Hydrocarbon Analyses: 5 | 3 | 2 | ☒

** Turnaround Requests less than standard will incur Rush Charges.*

FAX RESULTS BY :

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	Analysis Request: BTEX 8020	COMMENTS & PRESERVATIVES USED	NCA SAMPLE NUMBER
1. 95-540 - Box-5	2-24-95 1015	S	1	X		P502272
2. 95-541 - Box-6	2-24-95 0850	S	1	X	Allsamples field on ice	P502273
3. 95-542 - Box-23	2-24-95 0840	S	1	X		P502274
4. 95-543 - Box-24	2-24-95 0820	S	1	X		P502275
5. 95-544 - Box-25	2-24-95 0810	S	1	X		P502276
6. 95-545 - Box-26	2-24-95 0800	S	1	X		P502277
7.						
8.						
9.						
10.						

RELINQUISHED BY: Dianne E Mullan	DATE: 2-24-95	RECEIVED BY: Sara Mc Clurg	DATE: 2-24-95
PRINT NAME: Dianne Mullan FIRM: Wacker Siltronic	TIME: 1135	PRINT NAME: Sara McClurg FIRM: NCA	TIME: 1135
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
PRINT NAME: FIRM:	TIME:	PRINT NAME: FIRM:	TIME:

ADDITIONAL REMARKS:

PAGE OF

COC Rev 6, 10/94

SCOEPA00019123

SAMPLES SENT TO OUTSIDE LABORATORY
FAB-2

1. WSC#: 95-540

2. Date/Time of Sample: 2-24-95 / 1015

3. Name of Sampler: Dianne Mullan, Gary Kent

4. Sample Discription: Drop Box 5 ID# 163

Other _____

5. Sent To: X North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

6. Analyses Required: BTEX (8020)

7. Chain of Custody Submitted; (Yes) No

8. Purchase Order Number: 31002

9. Final Results Received On: _____

10. Additional Notes; _____

TJR 15 Nov 91
TJR 01 Nov 91
DEM 05 Jan 95

NORTH CREEK ANALYTICAL

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

February 28, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

RE: JOB # BOXES
P.O.# 31002
PROJECT - FAB-2

Enclosed are test results for your samples received in this lab on Feb. 24, 1995. For your reference, these analyses have been assigned our NCA # P502272.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

This report will be accompanied by a separate Quality Control Data Report, unless omitted by client request.

Please call if you have any questions.

Respectfully,

Howard Holmes
Project Manager

NORTH CREEK ANALYTICAL

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BTEX per EPA 8020
Results In ug/kg (ppb)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P502272
Matrix: soil
Sampled: 02/24/1995
Received: 02/24/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-540-Box-5	P502272-1	Benzene	180	130	02/24/95	02/24/95
		Toluene	480	130		
		Ethylbenzene	2700	130		
		Xylene (total)	6000	130		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019126

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

SURROGATE RECOVERIES (%)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P502272
Received: 02/24/1995

Sample Name	Analyte	Result	Control Limits
BTEX per EPA 8020			
95-540-Box-5	4-Bromofluorobenzene	104	63-126

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019127

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

February 28, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

Re: Quality Control Data
JOB # BOXES
P.O.# 31002
PROJECT - FAB-2

NCA project number P502272.

Note: Surrogate Recoveries are included in the final report.

QUALITY CONTROL DEFINITIONS

METHOD BLANK RESULTS

The method blank is an analyte-free matrix which is carried through the same analytical process as the samples. It is used to document contamination that may result from the analytical process.

SURROGATE STANDARD

A surrogate standard (i.e., a chemical compound not expected to occur in an environmental sample) is added to each sample, blank, and matrix spike sample just prior to extraction or processing. The recovery of the surrogate standard is used to monitor for unusual matrix effects, gross sample processing errors, etc. Surrogate recovery is evaluated for acceptance by determining whether the measured concentration falls within accepted limits.

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Accuracy is measured by percent recovery as in:

$$\% \text{ Recovery} = \frac{\text{(Measured Concentration)}}{\text{(Actual Concentration)}} \times 100$$

Precision is measured using duplicate tests by relative percent difference.

$$\text{RPD} = \frac{\text{(Result of Test 1 - Result of Test 2)}}{\text{(Result of Test 1 + Result of Test 2)/2}} \times 100$$

If you should have any questions concerning this report, please contact me.

Sincerely,

Howard Holmes
Project Manager

SCOEPA00019129

NORTH CREEK ANALYTICAL

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BATCH QUALITY CONTROL RESULTS
BTEX per EPA 8020

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P502272
Received: 02/24/1995

METHOD BLANK
Batch # BS95005d
Results In ug/kg (ppb)

Compound	Result	MRL
Benzene	ND	13
Toluene	ND	13
Ethylbenzene	ND	13
Xylene (total)	ND	13
Date Prepared	02/24/1995	
Date Analyzed	02/24/1995	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	108	63-126

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # BS95005a **Spike ID P502225-6**
Results In ug/kg (ppb)

Compound	Spike Added	Sample Conc	MS Conc	MS %Rec
Benzene	20	ND	13.6	68
Chlorobenzene	20	ND	15.1	76
Ethylbenzene	20	ND	16.0	80
Toluene	20	0.519	17.5	85
o-Xylene	20	ND	15.8	79

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
Benzene	20	14.5	73	7.1	17	56-123
Chlorobenzene	20	16.1	81	6.4	16	53-124
Ethylbenzene	20	17.0	85	6.1	20	45-130
Toluene	20	18.4	89	4.6	24	54-123
o-Xylene	20	16.6	83	4.9	20	50-127

SCOEPA00019130

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

BATCH QUALITY CONTROL RESULTS
BTEX per EPA 8020

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P502272
Received: 02/24/1995

LABORATORY CONTROL SAMPLE
Batch # BS95005c
Results In ug/kg (ppb)

Compound	True	Found	% Rec	QC Limit % Rec
Benzene	20	17.8	89	69-138
Chlorobenzene	20	20.2	101	72-137
Ethylbenzene	20	20.8	104	61-141
Toluene	20	22.3	112	53-151
o-Xylene	20	20.6	103	62-144

SCOEPA00019131

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9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202

CHAIN OF CUSTODY REPORT

CLIENT: Wacker Siltronic

ADDRESS: 7200 N.W. Front Ave
Portland, OR

PHONE: 243-2020 x374 FAX: 241-7599

PROJECT NAME: FAB-2

PROJECT NUMBER: Boxes

SAMPLED BY: Dianne Mullan, Gary Kent

REPORT TO: Dianne Mullan

BILLING TO:

P.O. NUMBER: 31002

NCA QUOTE #:

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: 10 | 5 | 3 | 2 | 1

(Please Select One)

Fuels & Hydrocarbon Analyses: 5 | 3 | 2 | ~~1~~

* Turnaround Requests less than standard will incur Rush Charge.

FAX RESULTS BY :

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	Analysis Request: BTEX 8020	COMMENTS & PRESERVATIVES USED	NCA SAMPLE NUMBER
1. 95-540 - Box-5	2-24-95 1015	S	1	X		P502272
2. 95-541 - Box-6	2-24-95 0850	S	1	X		P502273
3. 95-542 - Box-23	2-24-95 0840	S	1	X		P502274
4. 95-543 - Box-24	2-24-95 0820	S	1	X		P502275
5. 95-544 - Box-25	2-24-95 0810	S	1	X		P502276
6. 95-545 - Box-26	2-24-95 0800	S	1	X		P502277
7.						
8.						
9.						
10.						

Allow samples to hold on ice.

RELINQUISHED BY:	DATE: 2-24-95	RECEIVED BY: Sara McClary	DATE: 2-24-95
PRINT NAME: Dianne Mullan FIRM: Wacker Siltronic	TIME: 1135	PRINT NAME: Sara McClary FIRM: NCA	TIME: 1135
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
PRINT NAME: FIRM:	TIME:	PRINT NAME: FIRM:	TIME:

ADDITIONAL REMARKS:

PAGE OF

COC Rev 6, 10/94

SCOEPA00019132

SAMPLES SENT TO OUTSIDE LABORATORY

FAB-2

1. WSC#: 95- 505

2. Date/Time of Sample: 1-10-95 / 1315

3. Name of Sampler: George Stevens, Dianne Mullen

4. Sample Discription: Drop Box 6 ID# 172

Other _____

5. Sent To: ✓ North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

6. Analyses Required: UCLP 8240, TPH-D

7. Chain of Custody Submitted; Yes ~~No~~

8. Purchase Order Number: 31002

9. Final Results Received On: ✓

10. Additional Notes; _____

TJR 15 Nov 91
TJR 01 Nov 91
DEM 05 Jan 95

NORTH CREEK ANALYTICAL

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East 11115 Montgomery, Suite B • Spokane, WA 99206-4776 (509) 924-9200 • FAX 924-9290
9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

INVOICE FOR ANALYTICAL SERVICES

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Accounts Payable

Project Manager: Dianne Mullan

Project: FAB-2
#BOX 6

Invoice Number: 25010074

Invoice Date: 01/17/95

P.O. #31002

Soil, Received 1/10/95

NCA Sample #: P501095

QTY	ANALYSES PERFORMED	T.A.T.	UNIT PRICE	NET AMOUNT
1	TPH-Diesel	1 Day	136.00	136.00
1	8240, Short List	1 Day	390.00	390.00

Invoice Total $ 526.00

```
*****************************************
*                                       *
* Remit To: North Creek Analytical, Inc. *
*           18939 - 120th Ave. NE  #101 *
*           Bothell, WA      98011-9508 *
*                                       *
*****************************************
```

COPY

TERMS: NET 30 DAYS
PAST DUE INVOICES ARE SUBJECT TO A 1.5% PER MONTH SERVICE CHARGE

NORTH CREEK ANALYTICAL

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RECEIVED JAN 1 9 1995

January 13, 1995

RECEIVED JAN 1 9 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

RE: JOB # BOX 6
P.O.# 31002
PROJECT - FAB-2

Enclosed are test results for your samples received in this lab on Jan. 10, 1995. For your reference, these analyses have been assigned our NCA # P501095.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

Please call if you have any questions.

Respectfully,

Howard Holmes
Project Manager

NORTH CREEK ANALYTICAL

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TPH-D per Oregon DEQ
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501095
Matrix: soil
Sampled: 01/10/1995
Received: 01/10/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-505-Box 6	P501095-1	Diesel/related	57	25	01/10/95	01/10/95
Method Blank		Diesel/related	ND	25		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019136

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TCLP VOC's per EPA 8240
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501095
Matrix: soil
Sampled: 01/10/1995
Received: 01/10/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-505-Box 6	P501095-1	Benzene	ND	0.0040	01/10/95	01/10/95
		Carbon Tetrachloride	ND	0.0040		
		Chlorobenzene	ND	0.0040		
		Chloroform	ND	0.0040		
		1,4-Dichlorobenzene	ND	0.0040		
		1,2-Dichloroethane	ND	0.0040		
		1,1-Dichloroethene	ND	0.0040		
		Methyl Ethyl Ketone	ND	0.015		
		Tetrachloroethene	ND	0.0040		
		Trichloroethene	ND	0.0040		
		Vinyl Chloride	ND	0.010		
Method Blank		Benzene	ND	0.0020		
		Carbon Tetrachloride	ND	0.0020		
		Chlorobenzene	ND	0.0020		
		Chloroform	ND	0.0020		
		1,4-Dichlorobenzene	ND	0.0020		
		1,2-Dichloroethane	ND	0.0020		
		1,1-Dichloroethene	ND	0.0020		
		Methyl Ethyl Ketone	ND	0.0075		
		Tetrachloroethene	ND	0.0020		
		Trichloroethene	ND	0.0020		
		Vinyl Chloride	ND	0.0050		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019137

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SURROGATE RECOVERIES (%)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P501095
Received: 01/10/1995

Sample Name	Analyte	Result	Control Limits
TPH-D per Oregon DEQ			
95-505-Box 6	1-Chlorooctadecane	106	50-150
TCLP VOC's per EPA 1311, 8240			
95-505-Box 6	4-Bromofluorobenzene	97	74-121
	1,2-Dichloroethane-d4	85	70-121
	Toluene-d8	98	81-117

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019138

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RECEIVED JAN 1 9 1995

January 13, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

Re: Requested Quality Control Data

Enclosed is the in-house quality control data you requested on NCA project number P501095.

Note: Method blank results and Surrogate Recoveries are included in the final report.

QUALITY CONTROL DEFINITIONS

METHOD BLANK RESULTS

A Method Blank is a laboratory-generated sample which assesses the degree to which laboratory operations and procedures cause false-positive analytical results for your sample.

No target parameters were detected in the method blank associated with your sample at the reporting limit levels noted on the data sheets in the final report.

SURROGATE STANDARD

A surrogate standard (i.e., a chemical compound not expected to occur in an environmental sample) is added to each sample, blank, and matrix spike sample just prior to extraction or processing. The recovery of the surrogate standard is used to monitor for unusual matrix effects, gross sample processing errors, etc. Surrogate recovery is evaluated for acceptance by determining whether the measured concentration falls within accepted limits.

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Accuracy is measured by percent recovery as in:

$$\% \text{ Recovery} = \frac{\text{(Measured Concentration)}}{\text{(Actual Concentration)}} \times 100$$

Precision is measured using duplicate tests by relative percent difference.

$$\text{RPD} = \frac{\text{(Result of Test 1 - Result of Test 2)}}{\text{(Result of Test 1 + Result of Test 2)/2}} \times 100$$

If you should have any questions concerning this report, please contact me.

Sincerely,

Howard Holmes
Project Manager

NORTH CREEK ANALYTICAL

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BATCH QUALITY CONTROL RESULTS
TPH-D per Oregon DEQ

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501095
Received: 01/10/1995

METHOD BLANK
Batch # FC94044f
Results In mg/kg (ppm)

Compound	Result	MRL
Diesel/related	ND	25
Date Prepared	01/10/1995	
Date Analyzed	01/10/1995	

Surrogate Recovery (%)	Result	Control Limit
1-Chlorooctadecane	94	50-150

DUPLICATE
Batch # FC94044c
Results In mg/kg (ppm)

Compound	Sample Conc	Dup Conc	RPD	QC Limit RPD
Diesel/related	1,000	1,600	47	50

LABORATORY CONTROL SAMPLE
Batch # FC94044a
Results In mg/kg (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Diesel/related	120	140	117	50-150

SCOEPA00019141

NORTH CREEK ANALYTICAL
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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P501095
Received: 01/10/1995

METHOD BLANK
Batch # VS95001d
Results In mg/kg (ppm)

Compound	Result	MRL
Benzene	ND	0.0020
Carbon Tetrachloride	ND	0.0020
Chlorobenzene	ND	0.0020
Chloroform	ND	0.0020
1,4-Dichlorobenzene	ND	0.0020
1,2-Dichloroethane	ND	0.0020
1,1-Dichloroethene	ND	0.0020
Methyl Ethyl Ketone	ND	0.0075
Tetrachloroethene	ND	0.0020
Trichloroethene	ND	0.0020
Vinyl Chloride	ND	0.0050
Date Prepared	01/10/1995	
Date Analyzed	01/10/1995	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	96	74-121
1,2-Dichloroethane-d4	83	70-121
Toluene-d8	97	81-117

SCOEPA00019142

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P501095
Received: 01/10/1995

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # VS95001a **Spike ID P501016-4a**
Results In mg/kg (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS %Rec
Benzene	0.020	ND	0.0222	111
Chlorobenzene	0.020	ND	0.0210	105
1,1-Dichloroethene	0.020	ND	0.0195	98
Toluene	0.020	ND	0.0199	100
Trichloroethene	0.020	ND	0.0194	97

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
Benzene	0.020	0.0206	103	7.5	21	66-142
Chlorobenzene	0.020	0.0186	93	13	21	60-133
1,1-Dichloroethene	0.020	0.0174	87	12	22	59-172
Toluene	0.020	0.0179	90	11	21	59-139
Trichloroethene	0.020	0.0174	87	11	24	62-137

SCOEPA00019143

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15055 S.W. Sequoia Parkway, Suite 110, Portland, OR 97224-7155 (503) 624-9800 FAX 684-3782

CHAIN OF CUSTODY REPORT

CLIENT: Wacker Siltronic

ADDRESS: 7200 N.W. Front Ave
Portland, OR

PHONE: 243-2020 X-324 FAX: 241-7599

PROJECT NAME: 7AB-2

PROJECT NUMBER: Box 6

SAMPLED BY: George Stevens D. Mullen

REPORT TO: Dianne Mullen

BILLING TO:

P.O. NUMBER: 31002

NCA QUOTE #:

SAME DAY RUSH	(+150%)	X
NEXT BUSINESS DAY RUSH	(+100%)	
2 BUSINESS DAY RUSH	(+80%)	
3 BUSINESS DAY RUSH	(+60%)	
5 BUSINESS DAY RUSH	(+40%)	
10 BUSINESS DAY STANDARD	(LIST PRICE)	
5 BUS. DAY HYDROCARBONS	(LIST PRICE)	

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	Analysis Request: JCLP 8240			TPH-D							COMMENTS & PRESERVATIVES USED	NORTH CREEK SAMPLE NUMBER
1. 95-505-Box 6	1-10-95 / 1315	S	2		X		X							Held on ice	P501095
2.															
3.															
4.															
5.															
6.															
7.															
8.															
9.															
10.															

RELINQUISHED BY: Dianne Mullen	DATE: 1/10/95	RECEIVED BY: Sara McClurg	DATE: 1/10/95
FIRM: Wacker Siltronic	TIME: 1530	FIRM: Sara McClurg	TIME: 1530
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
FIRM:	TIME:	FIRM:	TIME:

ADDITIONAL REMARKS:

PAGE OF

SCOEPA00019144

SAMPLES SENT TO OUTSIDE LABORATORY
FAB-2

1. WSC#: 95-519

2. Date/Time of Sample: 1-17-95 / 1350

3. Name of Sampler: Olom Philavanh Diana Mullen

4. Sample Discription: Drop Box 6 ID# 172

Other _____

5. Sent To: X North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

6. Analyses Required: JCLP-8240, TPH-D

7. Chain of Custody Submitted; (Yes) No

8. Purchase Order Number: 31002

9. Final Results Received On: ✓

10. Additional Notes; _____

TJR 15 Nov 91
TJR 01 Nov 91
DEM 05 Jan 95

NORTH CREEK ANALYTICAL

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INVOICE FOR ANALYTICAL SERVICES

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Accounts Payable

Project Manager: Dianne Mullan

Project: FAB-2
#BOX-6-16,19,21

Invoice Number: 25010229

Invoice Date: 01/26/95

P.O. #31002

Soil, Received 1/17/95

NCA Sample #: P501176

QTY	ANALYSES PERFORMED	T.A.T.	UNIT PRICE	NET AMOUNT
4	TPH-Diesel	2 Day	112.00	448.00
3	(Short List)	2 Day	351.00	1,053.00
1	(Short)	2 Day	513.00	513.00

COPY

Invoice Total $ 2,014.00

```
*****************************************
*                                       *
* Remit To: North Creek Analytical, Inc. *
*           18939 - 120th Ave. NE  #101 *
*           Bothell, WA      98011-9508 *
*                                       *
*****************************************
```

TERMS: NET 30 DAYS
PAST DUE INVOICES ARE SUBJECT TO A 1.5% PER MONTH SERVICE CHARGE

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January 20, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

RE: JOB # Box-6, 16, 19, 21
P.O.# 31002
PROJECT - FAB-2

Enclosed are test results for your samples received in this lab on Jan. 17, 1995. For your reference, these analyses have been assigned our NCA # P501176.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

Please call if you have any questions.

Respectfully,

Howard Holmes
Project Manager

NORTH CREEK ANALYTICAL

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TPH-D per Oregon DEQ
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501176
Matrix: soil
Sampled: 01/17/1995
Received: 01/17/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-519-Box-6	P501176-1	Diesel/related	25,000	1000	01/17/95	01/18/95
95-520-Box-16	P501176-2	Diesel/related	1,500	250	01/17/95	01/18/95
95-521-Box-19	P501176-3	Diesel/related	3,900	250	01/17/95	01/19/95
95-522-Box-21	P501176-4	Diesel/related	790	130	01/17/95	01/18/95
Method Blank		Diesel/related	ND	25		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019148

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TCLP VOC's per EPA 1311, 8240
Results In mg/L (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501176
Matrix: soil
Sampled: 01/17/1995
Received: 01/17/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-519-Box-6	P501176-1	Benzene	0.92	0.020	01/19/95	01/19/95
		Carbon Tetrachloride	ND	0.020		
		Chlorobenzene	ND	0.020		
		Chloroform	ND	0.020		
		1,4-Dichlorobenzene	ND	0.020		
		1,2-Dichloroethane	ND	0.020		
		1,1-Dichloroethene	ND	0.020		
		Methyl Ethyl Ketone	ND	0.10		
		Tetrachloroethene	ND	0.020		
		Trichloroethene	ND	0.020		
		Vinyl Chloride	ND	0.050		
95-520-Box-16	P501176-2	Benzene	0.019	0.010	01/18/95	01/18/95
		Carbon Tetrachloride	ND	0.010		
		Chlorobenzene	ND	0.010		
		Chloroform	ND	0.010		
		1,4-Dichlorobenzene	ND	0.010		
		1,2-Dichloroethane	ND	0.010		
		1,1-Dichloroethene	ND	0.010		
		Methyl Ethyl Ketone	ND	0.050		
		Tetrachloroethene	ND	0.010		
		Trichloroethene	ND	0.010		
		Vinyl Chloride	ND	0.025		
95-521-Box-19	P501176-3	Benzene	ND	0.010	01/18/95	01/18/95
		Carbon Tetrachloride	ND	0.010		
		Chlorobenzene	ND	0.010		
		Chloroform	ND	0.010		
		1,4-Dichlorobenzene	ND	0.010		
		1,2-Dichloroethane	ND	0.010		
		1,1-Dichloroethene	ND	0.010		
		Methyl Ethyl Ketone	ND	0.050		
		Tetrachloroethene	ND	0.010		
		Trichloroethene	ND	0.010		
		Vinyl Chloride	ND	0.025		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019149

NORTH CREEK ANALYTICAL
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TCLP VOC's per EPA 1311, 8240

Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501176
Matrix: soil
Sampled: 01/17/1995
Received: 01/17/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-522-Box-21	P501176-4	Benzene	ND	0.010	01/18/95	01/18/95
		Carbon Tetrachloride	ND	0.010		
		Chlorobenzene	ND	0.010		
		Chloroform	ND	0.010		
		1,4-Dichlorobenzene	ND	0.010		
		1,2-Dichloroethane	ND	0.010		
		1,1-Dichloroethene	ND	0.010		
		Methyl Ethyl Ketone	ND	0.050		
		Tetrachloroethene	ND	0.010		
		Trichloroethene	ND	0.010		
		Vinyl Chloride	ND	0.025		
Method Blank		Benzene	ND	0.0020		
		Carbon Tetrachloride	ND	0.0020		
		Chlorobenzene	ND	0.0020		
		Chloroform	ND	0.0020		
		1,4-Dichlorobenzene	ND	0.0020		
		1,2-Dichloroethane	ND	0.0020		
		1,1-Dichloroethene	ND	0.0020		
		Methyl Ethyl Ketone	ND	0.010		
		Tetrachloroethene	ND	0.0020		
		Trichloroethene	ND	0.0020		
		Vinyl Chloride	ND	0.0050		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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SURROGATE RECOVERIES (%)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P501176
Received: 01/17/1995

Sample Name	Analyte	Result	Control Limits
TPH-D per Oregon DEQ			
95-519-Box-6	1-Chlorooctadecane	-- *[1]	50-150
95-520-Box-16	1-Chlorooctadecane	104	50-150
95-521-Box-19	1-Chlorooctadecane	114	50-150
95-522-Box-21	1-Chlorooctadecane	102	50-150
TCLP VOC's per EPA 1311, 8240			
95-519-Box-6	4-Bromofluorobenzene	102	74-121
	1,2-Dichloroethane-d4	100	70-121
	Toluene-d8	101	81-117
95-520-Box-16	4-Bromofluorobenzene	90	74-121
	1,2-Dichloroethane-d4	101	70-121
	Toluene-d8	94	81-117
95-521-Box-19	4-Bromofluorobenzene	89	74-121
	1,2-Dichloroethane-d4	101	70-121
	Toluene-d8	94	81-117
95-522-Box-21	4-Bromofluorobenzene	95	74-121
	1,2-Dichloroethane-d4	101	70-121
	Toluene-d8	98	81-117

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

NORTH CREEK ANALYTICAL

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COMMENTS

Client:	Wacker Siltronic Corporation	NCA Number:	P501176
Project:	FAB-2	**Received:**	01/17/1995

1. Unable to calculate surrogate recovery due to matrix interference.

SCOEPA00019152

NORTH CREEK ANALYTICAL

18939 120th Avenue N.E., Suite 101 • Bothell, WA 98011-9508 (206) 481-9200 • FAX 485-2992
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January 20, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

Re: Requested Quality Control Data

Enclosed is the in-house quality control data you requested on NCA project number P501176.

Note: Method blank results and Surrogate Recoveries are included in the final report.

QUALITY CONTROL DEFINITIONS

METHOD BLANK RESULTS

A Method Blank is a laboratory-generated sample which assesses the degree to which laboratory operations and procedures cause false-positive analytical results for your sample.

No target parameters were detected in the method blank associated with your sample at the reporting limit levels noted on the data sheets in the final report.

SURROGATE STANDARD

A surrogate standard (i.e., a chemical compound not expected to occur in an environmental sample) is added to each sample, blank, and matrix spike sample just prior to extraction or processing. The recovery of the surrogate standard is used to monitor for unusual matrix effects, gross sample processing errors, etc. Surrogate recovery is evaluated for acceptance by determining whether the measured concentration falls within accepted limits.

NORTH CREEK ANALYTICAL

18939 120th Avenue N.E., Suite 101 • Bothell, WA 98011-9508 (206) 481-9200 • FAX 485-2992
East 11115 Montgomery, Suite B • Spokane, WA 99206-4776 (509) 924-9200 • FAX 924-9290
9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

Accuracy is measured by percent recovery as in:

$$\% \text{ Recovery} = \frac{\text{(Measured Concentration)}}{\text{(Actual Concentration)}} \times 100$$

Precision is measured using duplicate tests by relative percent difference.

$$\text{RPD} = \frac{\text{(Result of Test 1 - Result of Test 2)}}{\text{(Result of Test 1 + Result of Test 2)/2}} \times 100$$

If you should have any questions concerning this report, please contact me.

Sincerely,

Howard Holmes
Project Manager

NORTH CREEK ANALYTICAL
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BATCH QUALITY CONTROL RESULTS
TPH-D per Oregon DEQ

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P501176
Received: 01/17/1995

METHOD BLANK
Batch # FC95001a
Results In mg/kg (ppm)

Compound	Result	MRL
Diesel/related	ND	25
Date Prepared	01/17/1995	
Date Analyzed	01/17/1995	

Surrogate Recovery (%)	Result	Control Limit
1-Chlorooctadecane	90	50-150

DUPLICATE
Batch # FC95001a
Results In mg/kg (ppm)
Duplicate ID P501176-4

Compound	Sample Conc	Dup Conc	RPD	QC Limit RPD
Diesel/related	790	790	0	50

LABORATORY CONTROL SAMPLE
Batch # FC95001a
Results In mg/kg (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Diesel/related	120	120	100	50-150

SCOEPA00019155

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P501176
Received: 01/17/1995

METHOD BLANK
Batch # VS95002c
Results In mg/kg (ppm)

Compound	Result	MRL
Benzene	ND	0.0020
Carbon Tetrachloride	ND	0.0020
Chlorobenzene	ND	0.0020
Chloroform	ND	0.0020
1,4-Dichlorobenzene	ND	0.0020
1,2-Dichloroethane	ND	0.0020
1,1-Dichloroethene	ND	0.0020
Methyl Ethyl Ketone	ND	0.010
Tetrachloroethene	ND	0.0020
Trichloroethene	ND	0.0020
Vinyl Chloride	ND	0.0050
Date Prepared	01/18/1995	
Date Analyzed	01/18/1995	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	100	74-121
1,2-Dichloroethane-d4	103	70-121
Toluene-d8	100	81-117

SCOEPA00019156

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 1311, 8240

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P501176
Received: 01/17/1995

METHOD BLANK
Batch # VZ95001d
Results In mg/L (ppm)

Compound	Result	MRL
Benzene	ND	0.0020
Carbon Tetrachloride	ND	0.0020
Chlorobenzene	ND	0.0020
Chloroform	ND	0.0020
1,4-Dichlorobenzene	ND	0.0020
1,2-Dichloroethane	ND	0.0020
1,1-Dichloroethene	ND	0.0020
Methyl Ethyl Ketone	ND	0.010
Tetrachloroethene	ND	0.0020
Trichloroethene	ND	0.0020
Vinyl Chloride	ND	0.0050
Date Extracted	01/18/1995	
Date Prepared	01/19/1995	
Date Analyzed	01/19/1995	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	98	74-121
1,2-Dichloroethane-d4	102	70-121
Toluene-d8	99	81-117

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P501176
Received: 01/17/1995

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # VS95002a **Spike ID P501093-1**
Results In mg/kg (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS %Rec
Benzene	0.020	ND	0.0208	104
Chlorobenzene	0.020	ND	0.0208	104
1,1-Dichloroethene	0.020	ND	0.0197	99
Toluene	0.020	0.0007	0.0214	104
Trichloroethene	0.020	ND	0.0203	102

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
Benzene	0.020	0.0206	103	0.97	21	66-142
Chlorobenzene	0.020	0.0203	102	1.9	21	60-133
1,1-Dichloroethene	0.020	0.0195	98	1.0	22	59-172
Toluene	0.020	0.0210	102	1.9	21	59-139
Trichloroethene	0.020	0.0199	100	2.0	24	62-137

SCOEPA00019158

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 1311, 8240

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P501176
Received: 01/17/1995

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # VZ95001a **Spike ID 94-4057-5a**
Results In mg/L (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS %Rec
Benzene	0.020	ND	0.0206	103
Chlorobenzene	0.020	ND	0.0206	103
1,1-Dichloroethene	0.020	ND	0.0188	94
Toluene	0.020	0.0382	0.0588	103
Trichloroethene	0.020	ND	0.0202	101

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
Benzene	0.020	0.0210	105	1.9	21	66-142
Chlorobenzene	0.020	0.0213	107	3.8	21	60-133
1,1-Dichloroethene	0.020	0.0194	97	3.1	22	59-172
Toluene	0.020	0.0590	104	0.97	21	59-139
Trichloroethene	0.020	0.0199	100	0.9950	24	62-137

SCOEPA00019159

NORTH CREEK ANALYTICAL

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15055 S.W. Sequoia Parkway, Suite 110, Portland, OR 97224-7155 (503) 624-9800 FAX 684-3782

CHAIN OF CUSTODY REPORT

CLIENT: Wacker Siltronic
ADDRESS: 7200 N.W. Front Ave, Portland, OR
PHONE: 243-2020 x-37 FAX: 241-7599

REPORT TO: Dianne E Mullan
BILLING TO:
P.O. NUMBER: 31002
NCA QUOTE #:

SAME DAY RUSH	(+150%)	
NEXT BUSINESS DAY RUSH	(+100%)	
2 BUSINESS DAY RUSH	(+80%)	X
3 BUSINESS DAY RUSH	(+60%)	
5 BUSINESS DAY RUSH	(+40%)	
10 BUSINESS DAY STANDARD	(LIST PRICE)	
5 BUS. DAY HYDROCARBONS	(LIST PRICE)	

PROJECT NAME: FAB-2
PROJECT NUMBER: Box-6, 16, 19, 21
SAMPLED BY: Odom Phila vanh Dianne Mullan

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	TCLP 8240	TPH-D	COMMENTS & PRESERVATIVES USED	NORTH CREEK SAMPLE NUMBER
1. 95-519 - Box-6	1-17-95/1350	S	2	X	X	all samples	P5011761
2. 95-520 - Box-16	1-17-95/1350	S	2	X	X	chilled on ice	-2
3. 95-521 - Box-19	1-17-95/1350	S	2	X	X		-3
4. 95-522 - Box-21	1-17-95/1350	S	2	X	X		-4
5.							
6.							
8.							
9.							
10.							

RELINQUISHED BY: Dianne Mullan	DATE: 1/17/95	RECEIVED BY: S. Pedersen	DATE: 1/17/95
FIRM: Wacker Siltronic	TIME: 1605	FIRM: NCA	TIME: 1605
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
FIRM:	TIME:	FIRM:	TIME:

ADDITIONAL REMARKS:

PAGE OF

SAMPLES SENT TO OUTSIDE LABORATORY

FAB-2

1. WSC#: 95-527

2. Date/Time of Sample: 1-25-95 / 1115

3. Name of Sampler: Gary Kent, Deanna Mullen

4. Sample Discription: Drop Box 6 ID# 172

Other _____

5. Sent To: X North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

6. Analyses Required: JCLP-8240

7. Chain of Custody Submitted; Yes No

8. Purchase Order Number: 31002

9. Final Results Received On: _____

10. Additional Notes; _____

TJR 15 Nov 91
TJR 01 Nov 91
DEM 05 Jan 95

NORTH CREEK ANALYTICAL

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RECEIVED FEB 6 1995

January 30, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

RE: JOB # BOX'S
P.O.# 31002
PROJECT - FAB-2

Enclosed are test results for your samples received in this lab on Jan. 25, 1995. For your reference, these analyses have been assigned our NCA # P501259.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

Please call if you have any questions.

Respectfully,

Howard Holmes
Project Manager

NORTH CREEK ANALYTICAL

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RECEIVED FEB 6 1995

TCLP VOC's per EPA 8240
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501259
Matrix: soil
Sampled: 01/25/1995
Received: 01/25/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-527-BOX 6	P501259-1	Benzene	2.4	0.25	01/26/95	01/26/95
		Carbon Tetrachloride	ND	0.25		
		Chlorobenzene	ND	0.25		
		Chloroform	ND	0.25		
		1,4-Dichlorobenzene	ND	0.25		
		1,2-Dichloroethane	ND	0.25		
		1,1-Dichloroethene	ND	0.25		
		Methyl Ethyl Ketone	1.3	0.94		
		Tetrachloroethene	ND	0.25		
		Trichloroethene	ND	0.25		
		Vinyl Chloride	ND	0.63		
Method Blank		Benzene	ND	0.25		
		Carbon Tetrachloride	ND	0.25		
		Chlorobenzene	ND	0.25		
		Chloroform	ND	0.25		
		1,4-Dichlorobenzene	ND	0.25		
		1,2-Dichloroethane	ND	0.25		
		1,1-Dichloroethene	ND	0.25		
		Methyl Ethyl Ketone	ND	0.94		
		Tetrachloroethene	ND	0.25		
		Trichloroethene	ND	0.25		
		Vinyl Chloride	ND	0.63		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

NORTH CREEK ANALYTICAL

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SURROGATE RECOVERIES (%)

RECEIVED FEB 6 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P501259
Received: 01/25/1995

Sample Name	Analyte	Result	Control Limits
TCLP VOC's per EPA 1311, 8240			
95-527-BOX 6	4-Bromofluorobenzene	91	74-121
	1,2-Dichloroethane-d4	85	70-121
	Toluene-d8	95	81-117

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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RECEIVED FEB 6 1995

January 30, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

Re: Requested Quality Control Data

Enclosed is the in-house quality control data you requested on NCA project number P501259.

Note: Method blank results and Surrogate Recoveries are included in the final report.

QUALITY CONTROL DEFINITIONS

METHOD BLANK RESULTS

A Method Blank is a laboratory-generated sample which assesses the degree to which laboratory operations and procedures cause false-positive analytical results for your sample.

No target parameters were detected in the method blank associated with your sample at the reporting limit levels noted on the data sheets in the final report.

SURROGATE STANDARD

A surrogate standard (i.e., a chemical compound not expected to occur in an environmental sample) is added to each sample, blank, and matrix spike sample just prior to extraction or processing. The recovery of the surrogate standard is used to monitor for unusual matrix effects, gross sample processing errors, etc. Surrogate recovery is evaluated for acceptance by determining whether the measured concentration falls within accepted limits.

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RECEIVED FEB 6 1995

Accuracy is measured by percent recovery as in:

$$\% \text{ Recovery} = \frac{\text{(Measured Concentration)}}{\text{(Actual Concentration)}} \times 100$$

Precision is measured using duplicate tests by relative percent difference.

$$\text{RPD} = \frac{\text{(Result of Test 1 - Result of Test 2)}}{\text{(Result of Test 1 + Result of Test 2)/2}} \times 100$$

If you should have any questions concerning this report, please contact me.

Sincerely,

Howard Holmes
Project Manager

NORTH CREEK ANALYTICAL

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501259
Received: 01/25/1995

RECEIVED FEB 6 1995

METHOD BLANK
Batch # VE95003b
Results In mg/kg (ppm)

Compound	Result	MRL
Benzene	ND	0.25
Carbon Tetrachloride	ND	0.25
Chlorobenzene	ND	0.25
Chloroform	ND	0.25
1,4-Dichlorobenzene	ND	0.25
1,2-Dichloroethane	ND	0.25
1,1-Dichloroethene	ND	0.25
Methyl Ethyl Ketone	ND	0.94
Tetrachloroethene	ND	0.25
Trichloroethene	ND	0.25
Vinyl Chloride	ND	0.63
Date Prepared	01/26/1995	
Date Analyzed	01/26/1995	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	98	74-121
1,2-Dichloroethane-d4	86	70-121
Toluene-d8	98	81-117

SCOEPA00019167

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

RECEIVED FEB 6 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501259
Received: 01/25/1995

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # VE95003a **Spike ID P501226-1**
Results In mg/kg (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS %Rec
Benzene	2.50	ND	2.44	98
Chlorobenzene	2.50	ND	2.30	92
1,1-Dichloroethene	2.50	ND	2.43	97
Toluene	2.50	ND	2.48	99
Trichloroethene	2.50	ND	2.93	117

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
Benzene	2.50	2.56	102	4.0	21	66-142
Chlorobenzene	2.50	2.43	97	5.3	21	60-133
1,1-Dichloroethene	2.50	2.70	108	11	22	59-172
Toluene	2.50	2.64	106	6.8	21	59-139
Trichloroethene	2.50	2.46	98	18	24	62-137

SCOEPA00019168

NORTH CREEK ANALYTICAL

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9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202

CHAIN OF CUSTODY REPORT

RECEIVED FEB 6 1995

CLIENT: Wacker Siltronic
ADDRESS: 7200 N.W. Front Ave Portland, OR
PHONE: 243-2020 X-374 FAX:

REPORT TO: Dianne Mullan
BILLING TO:
P.O. NUMBER: 32001
NCA QUOTE #:

PROJECT NAME: FAB-2
PROJECT NUMBER: Box's
SAMPLED BY: Gary Kent, Dianne Mullan

TURNAROUND REQUEST in Business Days *
Organic & Inorganic Analyses: 10 | 5 | 3 | 2 | 1
(Please Select One)
Fuels & Hydrocarbon Analyses: 5 | 3 | 2 | 1
* Turnaround Requests less than standard will incur Rush Charg
FAX RESULTS BY :

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	TC UP 8240	TPH-D	COMMENTS & PRESERVATIVES USED	NCA SAMPLE NUMBER
1. 95-526 - Box 5	1-25-95/1050	S	1	X			P501258-1
2. 95-527 - Box 6	1115	S	1	X			P501259-1
3. 95-528 - Box-22	1130	S	2	X	X		P501260-1
4. 95-529 - Box-24	1145	S	2	X	X		P501261-1
5. 95-530 - Box-25	1200	S	2	X	X		P501262-1
6. 95-531 - Box-26	1245	S	2	X	X		P501263-1
7. 95-532 - Box-27	1300	S	2	X	X		P501264-1
8. 95-525 - Box-28	1040	S	2	X	X		P501265-1
9.							
10.							

Analysis Request: TC UP 8240; TPH-D

Wheel on ice

RELINQUISHED BY: Dianne Mullan DATE: 1-25-95
PRINT NAME: Dianne Mullan FIRM: Wacker Siltronic TIME: 1655

RECEIVED BY: Sara McCluig DATE: 1-25-95
PRINT NAME: Sara McCluig FIRM: NCA TIME: 1655

RELINQUISHED BY: DATE:
PRINT NAME: FIRM: TIME:

RECEIVED BY: DATE:
PRINT NAME: FIRM: TIME:

ADDITIONAL REMARKS:

PAGE OF

COC Rev 6, 10/94

SCOEPA00019169

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RECEIVED FEB 6 1995

INVOICE FOR ANALYTICAL SERVICES

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Accounts Payable

Project Manager: Dianne Mullan

Project: FAB-2
BOX'S

Invoice Number: 25010278

Invoice Date: 01/31/95

P.O. #31002

Soil, Received 1/25/95

NCA Sample #: P501259

QTY	ANALYSES PERFORMED	T.A.T.	UNIT PRICE	NET AMOUNT
1	ZHE/TCLP Volatiles	2 Day	351.00	351.00

COPY

Invoice Total $ 351.00

```
*****************************************
*                                       *
* Remit To: North Creek Analytical, Inc. *
*           18939 - 120th Ave. NE  #101 *
*           Bothell, WA      98011-9508 *
*                                       *
*****************************************
```

TERMS: NET 30 DAYS
PAST DUE INVOICES ARE SUBJECT TO A 1.5% PER MONTH SERVICE CHARGE

NORTH CREEK ANALYTICAL

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9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202

CHAIN OF CUSTODY REPORT

CLIENT: Wacker Siltronic
ADDRESS: 7200 N.W. Front Ave Portland, OR
PHONE: 243-2020 X-374 FAX:

REPORT TO: Dianne Mullan
BILLING TO:
P.O. NUMBER: 3R002
NCA QUOTE #:

PROJECT NAME: FAB-2
PROJECT NUMBER: Box 5
SAMPLED BY: Gary Kent Dianne Mullan

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: 10 | 5 | 3 | 2 | 1

(Please Select One)

Fuels & Hydrocarbon Analyses: 5 | 3 | 2 | 1

* Turnaround Requests less than standard will incur Rush Charges.

FAX RESULTS BY :

Analysis Request:

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	TCLP 8240	TCLP(8)	TPH-D	TCLP 8150	Flash point 1010	pH 9040	TPH-G	TCLP 8270	TCLP Pest.	COMMENTS & PRESERVATIVES USED	NCA SAMPLE NUMBER
1. 95-526 - Box 5	1-25-95/1050	S	1		X		X							P501258-1
2. 95-527 - Box 6	1115	S	1		X		X							P501259-1
3. 95-528 - Box-22	1130	S	2		X		X							P501260-1
4. 95-529 - Box-24	1145	S	2	X	X	X	X	X	X	X	X	X		P501261-1
5. 95-530 - Box-25	1200	S	2		X		X							P501262-1
6. 95-531 - Box-26	1245	S	2		X		X							P501263-1
7. 95-532 - Box-27	1300	S	2		X		X							P501264-1
8. 95-525 - Box-28	1040	S	2		X		X							P501265-1
9.														
10.														

Initial DC 2/1/95

RELINQUISHED BY: Dianne Mullan	DATE: 1-25-95	RECEIVED BY: Sara McClurg	DATE: 1-25-95
PRINT NAME: Dianne Mullan FIRM: Wacker Siltronic	TIME: 1655	PRINT NAME: Sara McClurg FIRM: NCA	TIME: 1655
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
PRINT NAME: FIRM:	TIME:	PRINT NAME: FIRM:	TIME:

ADDITIONAL REMARKS:
additional analyses were added on #95-529-Box-24: TCLP(8) TCLP(8150) Flash Point (1010) pH (9040) TPH-G, TCLP (8270) TCLP (Pest)

PAGE OF

COC Rev 6, 10/94

(1) This sample was not included - sending it out on 1/26/95 DM

SCOEPA00019171

SAMPLES SENT TO OUTSIDE LABORATORY
FAB-2

1. WSC#: 95- 541

2. Date/Time of Sample: 2-24-95 / 0850

3. Name of Sampler: Dianne Mullan, Gary Kent

4. Sample Discription: Drop Box 6 ID# 172

   Other _____

5. Sent To: X North Creek Analytical
   (formerly Pacific Environmental Laboratory, Inc.)
   9405 SW Nimbus Avenue
   Beaverton, Oregon 97005
   643-9200

6. Analyses Required: BTEX 8020

7. Chain of Custody Submitted; (Yes) No

8. Purchase Order Number: 31002

9. Final Results Received On: _____

10. Additional Notes; _____

TJR 15 Nov 91
TJR 01 Nov 91
DEM 05 Jan 95

NORTH CREEK ANALYTICAL

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INVOICE FOR ANALYTICAL SERVICES

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Accounts Payable

Project Manager: Dianne Mullan

Project: FAB-2, BOXES

Invoice Number: 25020207

Invoice Date: 02/28/95

P.O. #31002

Soil, Received 2/24/95

NCA Sample #: P502273

QTY	ANALYSES PERFORMED	T.A.T.	UNIT PRICE	NET AMOUNT
1	BTEX Distinction	2 Day	70.00	70.00

COPY

Invoice Total $ 70.00

```
*****************************************
*                                       *
* Remit To: North Creek Analytical, Inc. *
*           18939 - 120th Ave. NE  #101 *
*           Bothell, WA      98011-9508 *
*                                       *
*****************************************
```

TERMS: NET 30 DAYS
PAST DUE INVOICES ARE SUBJECT TO A 1.5% PER MONTH SERVICE CHARGE

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February 28, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

RE: JOB # BOXES
P.O.# 31002
PROJECT - FAB-2

Enclosed are test results for your samples received in this lab on Feb. 24, 1995. For your reference, these analyses have been assigned our NCA # P502273.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

This report will be accompanied by a separate Quality Control Data Report, unless omitted by client request.

Please call if you have any questions.

Respectfully,

Howard Holmes
Project Manager

NORTH CREEK ANALYTICAL

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BTEX per EPA 8020
Results In ug/kg (ppb)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P502273
Matrix: soil
Sampled: 02/24/1995
Received: 02/24/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-541-Box-6	P502273-1	Benzene	ND	25	02/24/95	02/24/95
		Toluene	ND	25		
		Ethylbenzene	110	25		
		Xylene (total)	260	25		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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SURROGATE RECOVERIES (%)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P502273
Received: 02/24/1995

Sample Name	Analyte	Result	Control Limits
BTEX per EPA 8020			
95-541-Box-6	4-Bromofluorobenzene	98	63-126

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019176

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February 28, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

Re: Quality Control Data
JOB # BOXES
P.O.# 31002
PROJECT - FAB-2

NCA project number P502273.

Note: Surrogate Recoveries are included in the final report.

QUALITY CONTROL DEFINITIONS

METHOD BLANK RESULTS

The method blank is an analyte-free matrix which is carried through the same analytical process as the samples. It is used to document contamination that may result from the analytical process.

SURROGATE STANDARD

A surrogate standard (i.e., a chemical compound not expected to occur in an environmental sample) is added to each sample, blank, and matrix spike sample just prior to extraction or processing. The recovery of the surrogate standard is used to monitor for unusual matrix effects, gross sample processing errors, etc. Surrogate recovery is evaluated for acceptance by determining whether the measured concentration falls within accepted limits.

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Accuracy is measured by percent recovery as in:

$$\% \text{ Recovery} = \frac{\text{(Measured Concentration)}}{\text{(Actual Concentration)}} \times 100$$

Precision is measured using duplicate tests by relative percent difference.

$$\text{RPD} = \frac{\text{(Result of Test 1 - Result of Test 2)}}{\text{(Result of Test 1 + Result of Test 2)/2}} \times 100$$

If you should have any questions concerning this report, please contact me.

Sincerely,

Howard Holmes
Project Manager

SCOEPA00019178

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BATCH QUALITY CONTROL RESULTS
BTEX per EPA 8020

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P502273
Received: 02/24/1995

METHOD BLANK
Batch # BS95005d
Results In ug/kg (ppb)

Compound	Result	MRL
Benzene	ND	13
Toluene	ND	13
Ethylbenzene	ND	13
Xylene (total)	ND	13
Date Prepared	02/24/1995	
Date Analyzed	02/24/1995	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	108	63-126

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # BS95005a **Spike ID P502225-6**
Results In ug/kg (ppb)

Compound	Spike Added	Sample Conc	MS Conc	MS %Rec
Benzene	20	ND	13.6	68
Chlorobenzene	20	ND	15.1	76
Ethylbenzene	20	ND	16.0	80
Toluene	20	0.519	17.5	85
o-Xylene	20	ND	15.8	79

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
Benzene	20	14.5	73	7.1	17	56-123
Chlorobenzene	20	16.1	81	6.4	16	53-124
Ethylbenzene	20	17.0	85	6.1	20	45-130
Toluene	20	18.4	89	4.6	24	54-123
o-Xylene	20	16.6	83	4.9	20	50-127

SCOEPA00019179

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BATCH QUALITY CONTROL RESULTS
BTEX per EPA 8020

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P502273
Received: 02/24/1995

LABORATORY CONTROL SAMPLE
Batch # BS95005c
Results In ug/kg (ppb)

Compound	True	Found	% Rec	QC Limit % Rec
Benzene	20	17.8	89	69-138
Chlorobenzene	20	20.2	101	72-137
Ethylbenzene	20	20.8	104	61-141
Toluene	20	22.3	112	53-151
o-Xylene	20	20.6	103	62-144

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CHAIN OF CUSTODY REPORT

CLIENT: Wacker Siltronic

ADDRESS: 7200 N.W. Front Ave
Portland, OR

PHONE: 243-2020 x374 FAX: 241-7599

PROJECT NAME: FAB-2

PROJECT NUMBER: Boxes

SAMPLED BY: Dianne Mullan, Gary Kent

REPORT TO: Dianne Mullan

BILLING TO:

P.O. NUMBER: 31002

NCA QUOTE #:

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: 10 | 5 | 3 | 2 | 1

(Please Select One)

Fuels & Hydrocarbon Analyses: 5 | 3 | 2 | X

* Turnaround Requests less than standard will incur Rush Charge.

FAX RESULTS BY :

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	Analysis Request: BTEX 8020	COMMENTS & PRESERVATIVES USED	NCA SAMPLE NUMBER
1. 95-540 - Box-5	2-24-95 1015	S	1	X		P502272
2. 95-541 - Box-6	2-24-95 0850	S	1	X	attempts to field on ice	P502273
3. 95-542 - Box-23	2-24-95 0840	S	1	X		P502274
4. 95-543 - Box-24	2-24-95 0820	S	1	X		P502275
5. 95-544 - Box-25	2-24-95 0810	S	1	X		P502276
6. 95-545 - Box-26	2-24-95 0800	S	1	X		P502277
7.						
8.						
9.						
10.						

RELINQUISHED BY:	DATE: 2-24-95	RECEIVED BY: Sara McClary	DATE: 2-24-95
PRINT NAME: Dianne Mullan FIRM: Wacker Siltronic	TIME: 1135	PRINT NAME: Sara McClary FIRM: NCA	TIME: 1135
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
PRINT NAME: FIRM:	TIME:	PRINT NAME: FIRM:	TIME:

ADDITIONAL REMARKS:

PAGE OF

COC Rev 6, 10/94

SCOEPA00019181

SAMPLES SENT TO OUTSIDE LABORATORY
FAB-2

1. WSC#: 95- 506, -507, -508, -509 *#10.

2. Date/Time of Sample: ~~1-5~~ 1-4-95 / 1500

3. Name of Sampler: Justin Darr, George Steven, Dianne Muller

4. Sample Discription: Drop Box 7 ID# P
Other

5. Sent To: X North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

6. Analyses Required: TCLP 8240, TPH-D

7. Chain of Custody Submitted; (Yes) No

8. Purchase Order Number: 46998

9. Final Results Received On:

*10. Additional Notes; 95-507: Box-8 #161, 95-508:- Box-9- #910206
95-509: Box -10 #910214.

TJR 15 Nov 91
TJR 01 Nov 91
DEM 05 Jan 95

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RECEIVED JAN 1 9 1995

January 9, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

RE: JOB # BOX-T,8,9,10
P.O.# 31002
PROJECT - FAB-2

Enclosed are test results for your samples received in this lab on Jan. 04, 1995. For your reference, these analyses have been assigned our NCA # P501017.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

Please call if you have any questions.

Respectfully,

Howard Holmes
Project Manager

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TPH-D per Oregon DEQ
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501017
Matrix: soil
Sampled: 01/04/1995
Received: 01/04/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-506 (7)	P501017-1	Diesel/related	3,300	500	01/04/95	01/04/95
95-507 (8)	P501017-2	Diesel/related	1,000	100	01/04/95	01/04/95
95-508 (9)	P501017-3	Diesel/related	3,900	500	01/04/95	01/04/95
95-509 (10)	P501017-4	Diesel/related	12,000	500	01/04/95	01/04/95
Method Blank		Diesel/related	ND	25		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019184

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TCLP VOC's per EPA 1311, 8240
Results In mg/L (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501017
Matrix: soil
Sampled: 01/04/1995
Received: 01/04/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-506 (7)	P501017-1	Benzene	0.20	0.010	01/06/95	01/06/95
		Carbon Tetrachloride	ND	0.010		
		Chlorobenzene	ND	0.010		
		Chloroform	ND	0.010		
		1,4-Dichlorobenzene	ND	0.010		
		1,2-Dichloroethane	ND	0.010		
		1,1-Dichloroethene	ND	0.010		
		Methyl Ethyl Ketone	ND	0.038		
		Tetrachloroethene	ND	0.010		
		Trichloroethene	ND	0.010		
		Vinyl Chloride	ND	0.025		
95-507 (8)	P501017-2	Benzene	0.11	0.010	01/05/95	01/05/95
		Carbon Tetrachloride	ND	0.010		
		Chlorobenzene	ND	0.010		
		Chloroform	ND	0.010		
		1,4-Dichlorobenzene	ND	0.010		
		1,2-Dichloroethane	ND	0.010		
		1,1-Dichloroethene	ND	0.010		
		Methyl Ethyl Ketone	ND	0.038		
		Tetrachloroethene	ND	0.010		
		Trichloroethene	ND	0.010		
		Vinyl Chloride	ND	0.025		
95-508 (9)	P501017-3	Benzene	0.017	0.0020	01/05/95	01/05/95
		Carbon Tetrachloride	ND	0.0020		
		Chlorobenzene	ND	0.0020		
		Chloroform	ND	0.0020		
		1,4-Dichlorobenzene	ND	0.0020		
		1,2-Dichloroethane	ND	0.0020		
		1,1-Dichloroethene	ND	0.0020		
		Methyl Ethyl Ketone	ND	0.0075		
		Tetrachloroethene	ND	0.0020		
		Trichloroethene	ND	0.0020		
		Vinyl Chloride	ND	0.0050		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019185

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TCLP VOC's per EPA 1311, 8240
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501017
Matrix: soil
Sampled: 01/04/1995
Received: 01/04/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-509 (10)	P501017-4	Benzene	0.35	0.010	01/05/95	01/05/95
		Carbon Tetrachloride	ND	0.010		
		Chlorobenzene	ND	0.010		
		Chloroform	ND	0.010		
		1,4-Dichlorobenzene	ND	0.010		
		1,2-Dichloroethane	ND	0.010		
		1,1-Dichloroethene	ND	0.010		
		Methyl Ethyl Ketone	ND	0.038		
		Tetrachloroethene	ND	0.010		
		Trichloroethene	ND	0.010		
		Vinyl Chloride	ND	0.025		
Method Blank		Benzene	ND	0.0020		
		Carbon Tetrachloride	ND	0.0020		
		Chlorobenzene	ND	0.0020		
		Chloroform	ND	0.0020		
		1,4-Dichlorobenzene	ND	0.0020		
		1,2-Dichloroethane	ND	0.0020		
		1,1-Dichloroethene	ND	0.0020		
		Methyl Ethyl Ketone	ND	0.0075		
		Tetrachloroethene	ND	0.0020		
		Trichloroethene	ND	0.0020		
		Vinyl Chloride	ND	0.0050		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019186

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SURROGATE RECOVERIES (%)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P501017
Received: 01/04/1995

Sample Name	Analyte	Result	Control Limits
TPH-D per Oregon DEQ			
95-506 (7)	1-Chlorooctadecane	– *[1]	50-150
95-507 (8)	1-Chlorooctadecane	86	50-150
95-508 (9)	1-Chlorooctadecane	– *[1]	50-150
95-509 (10)	1-Chlorooctadecane	– *[1]	50-150
TCLP VOC's per EPA 1311, 8240			
95-506 (7)	4-Bromofluorobenzene	99	74-121
	1,2-Dichloroethane-d4	84	70-121
	Toluene-d8	99	81-117
95-507 (8)	4-Bromofluorobenzene	96	74-121
	1,2-Dichloroethane-d4	101	70-121
	Toluene-d8	97	81-117
95-508 (9)	4-Bromofluorobenzene	82	74-121
	1,2-Dichloroethane-d4	100	70-121
	Toluene-d8	101	81-117
95-509 (10)	4-Bromofluorobenzene	89	74-121
	1,2-Dichloroethane-d4	101	70-121
	Toluene-d8	93	81-117

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019187

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COMMENTS

Client:	Wacker Siltronic Corporation	NCA Number:	P501017
Project:	FAB-2	**Received:**	01/04/1995

1. Unable to calculate surrogate recovery due to matrix interference.

SCOEPA00019188

NORTH CREEK ANALYTICAL

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January 9, 1995

RECEIVED JAN 1 3 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

Re: Requested Quality Control Data

Enclosed is the in-house quality control data you requested on NCA project number P501017.

Note: Method blank results and Surrogate Recoveries are included in the final report.

QUALITY CONTROL DEFINITIONS

METHOD BLANK RESULTS

A Method Blank is a laboratory-generated sample which assesses the degree to which laboratory operations and procedures cause false-positive analytical results for your sample.

No target parameters were detected in the method blank associated with your sample at the reporting limit levels noted on the data sheets in the final report.

SURROGATE STANDARD

A surrogate standard (i.e., a chemical compound not expected to occur in an environmental sample) is added to each sample, blank, and matrix spike sample just prior to extraction or processing. The recovery of the surrogate standard is used to monitor for unusual matrix effects, gross sample processing errors, etc. Surrogate recovery is evaluated for acceptance by determining whether the measured concentration falls within accepted limits.

NORTH CREEK ANALYTICAL

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Accuracy is measured by percent recovery as in:

$$\% \text{ Recovery} = \frac{\text{(Measured Concentration)}}{\text{(Actual Concentration)}} \times 100$$

Precision is measured using duplicate tests by relative percent difference.

$$\text{RPD} = \frac{\text{(Result of Test 1 - Result of Test 2)}}{\text{(Result of Test 1 + Result of Test 2)/2}} \times 100$$

If you should have any questions concerning this report, please contact me.

Sincerely,

Howard Holmes
Project Manager

NORTH CREEK ANALYTICAL
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BATCH QUALITY CONTROL RESULTS
TPH-D per Oregon DEQ

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P501017
Received: 01/04/1995

METHOD BLANK
Batch # FC94044c
Results In mg/kg (ppm)

Compound	Result	MRL
Diesel/related	ND	25
Date Prepared	01/04/1995	
Date Analyzed	01/04/1995	

Surrogate Recovery (%)	Result	Control Limit
1-Chlorooctadecane	86	50-150

DUPLICATE
Batch # FC94044c
Results In mg/kg (ppm)

Compound	Sample Conc	Dup Conc	RPD	QC Limit RPD
Diesel/related	1,000	1,600	47	50

LABORATORY CONTROL SAMPLE
Batch # FC94044a
Results In mg/kg (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Diesel/related	120	140	117	50-150

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P501017
Received: 01/04/1995

METHOD BLANK
Batch # VS95001a
Results In mg/kg (ppm)

Compound	Result	MRL
Benzene	ND	0.0020
Carbon Tetrachloride	ND	0.0020
Chlorobenzene	ND	0.0020
Chloroform	ND	0.0020
1,4-Dichlorobenzene	ND	0.0020
1,2-Dichloroethane	ND	0.0020
1,1-Dichloroethene	ND	0.0020
Methyl Ethyl Ketone	ND	0.0075
Tetrachloroethene	ND	0.0020
Trichloroethene	ND	0.0020
Vinyl Chloride	ND	0.0050
Date Prepared	01/05/1995	
Date Analyzed	01/05/1995	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	97	74-121
1,2-Dichloroethane-d4	85	70-121
Toluene-d8	99	81-117

SCOEPA00019192

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 1311, 8240

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501017
Received: 01/04/1995

METHOD BLANK
Batch # VZ95001a
Results In mg/L (ppm)

Compound	Result	MRL
Benzene	ND	0.0020
Carbon Tetrachloride	ND	0.0020
Chlorobenzene	ND	0.0020
Chloroform	ND	0.0020
1,4-Dichlorobenzene	ND	0.0020
1,2-Dichloroethane	ND	0.0020
1,1-Dichloroethene	ND	0.0020
Methyl Ethyl Ketone	ND	0.0075
Tetrachloroethene	ND	0.0020
Trichloroethene	ND	0.0020
Vinyl Chloride	ND	0.0050
Date Extracted	01/05/1995	
Date Prepared	01/06/1995	
Date Analyzed	01/06/1995	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	100	74-121
1,2-Dichloroethane-d4	87	70-121
Toluene-d8	98	81-117

SCOEPA00019193

NORTH CREEK ANALYTICAL
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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P501017
Received: 01/04/1995

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # VS95001a **Spike ID P501016-4a**
Results In mg/kg (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS %Rec
Benzene	0.020	ND	0.0222	111
Chlorobenzene	0.020	ND	0.0210	105
1,1-Dichloroethene	0.020	ND	0.0195	98
Toluene	0.020	ND	0.0199	100
Trichloroethene	0.020	ND	0.0194	97

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
Benzene	0.020	0.0206	103	7.5	21	66-142
Chlorobenzene	0.020	0.0186	93	13	21	60-133
1,1-Dichloroethene	0.020	0.0174	87	12	22	59-172
Toluene	0.020	0.0179	90	11	21	59-139
Trichloroethene	0.020	0.0174	87	11	24	62-137

SCOEPA00019194

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 1311, 8240

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P501017
Received: 01/04/1995

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # VZ95001a **Spike ID 94-4057-5a**
Results In mg/L (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS %Rec
Benzene	0.020	ND	0.0206	103
Chlorobenzene	0.020	ND	0.0206	103
1,1-Dichloroethene	0.020	ND	0.0188	94
Toluene	0.020	0.0382	0.0588	103
Trichloroethene	0.020	ND	0.0202	101

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
Benzene	0.020	0.0210	105	1.9	21	66-142
Chlorobenzene	0.020	0.0213	107	3.8	21	60-133
1,1-Dichloroethene	0.020	0.0194	97	3.1	22	59-172
Toluene	0.020	0.0590	104	0.97	21	59-139
Trichloroethene	0.020	0.0199	100	0.9950	24	62-137

SCOEPA00019195

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15055 S.W. Sequoia Parkway, Suite 110, Portland, OR 97224-7155 (503) 624-9800 FAX 684-3782

CHAIN OF CUSTODY REPORT

CLIENT: Wacker Siltronic

ADDRESS: 7200 NW Front Ave
Portland, OR

PHONE: 243-2020 x-374 FAX: 241-7599

REPORT TO: Dianne Mullan
% T. Rothschild

BILLING TO:

P.O. NUMBER: 46998

NCA QUOTE #:

SAME DAY RUSH	(+150%)	X
NEXT BUSINESS DAY RUSH	(+100%)	
2 BUSINESS DAY RUSH	(+80%)	
3 BUSINESS DAY RUSH	(+60%)	
5 BUSINESS DAY RUSH	(+40%)	
10 BUSINESS DAY STANDARD	(LIST PRICE)	
5 BUS. DAY HYDROCARBONS	(LIST PRICE)	

PROJECT NAME: FAB-2

PROJECT NUMBER: ~~BOX~~-7, 8, 9, 10

SAMPLED BY: Justin, Dave, George Steven, D. Mullan

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	TCLP, 8240	TPH-D	COMMENTS & PRESERVATIVES USED	NORTH CREEK SAMPLE NUMBER
1. 95-506 (7)	1-4-95/1500	S	2	X	X	all cooled	P501017-1
2. 95-507 (8)	1-4-95/1500	S	2	X	X	ON ILE	-2
3. 95-508 (9)	1-4-95/1500	S	2	X	X		-3
4. 95-509 (10)	1-4-95/1500	S	2	X	X		-4
5.							
6.							
7.							
8.							
9.							
10.							

RELINQUISHED BY: Wacker Siltronic	DATE: 1-4-95	RECEIVED BY: J. Tedersen	DATE: 1/4/94
FIRM: Dianne Mullan	TIME: 1655	FIRM: NCA	TIME: 1655
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
FIRM:	TIME:	FIRM:	TIME:

ADDITIONAL REMARKS:

PAGE OF

NORTH CREEK ANALYTICAL

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INVOICE FOR ANALYTICAL SERVICES

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Accounts Payable

Project Manager: Dianne Mullan

Project: FAB-2, #BOX-T,8.9.;10

Invoice Number: 25010054

Invoice Date: 01/09/95

P.O. #31002

Soil, Received 1/4/95

NCA Sample #: P501017

QTY	ANALYSES PERFORMED	T.A.T.	UNIT PRICE	NET AMOUNT
4	TPH-Diesel	1 Day	112.00	448.00
3	8240, (Short List)	2 Day	351.00	1,053.00
1	8240, (Short) Rush	2 Day	513.00	513.00

COPY

Invoice Total $ 2,014.00

```
*****************************************
*                                       *
* Remit To: North Creek Analytical, Inc. *
*           18939 - 120th Ave. NE  #101 *
*           Bothell, WA      98011-9508 *
*                                       *
*****************************************
```

TERMS: NET 30 DAYS
PAST DUE INVOICES ARE SUBJECT TO A 1.5% PER MONTH SERVICE CHARGE

SAMPLES SENT TO OUTSIDE LABORATORY
FAB-2

1. WSC#: 95- 510

2. Date/Time of Sample: 1-5-95 / 1440

3. Name of Sampler: George Steven, Dianne Mullen

4. Sample Discription: Drop Box 11 ID# 166

Other _____

5. Sent To: X North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

6. Analyses Required: TCLP 8240, TPH-D

7. Chain of Custody Submitted; Yes No

8. Purchase Order Number: 46998

9. Final Results Received On: _____

10. Additional Notes; _____

TJR 15 Nov 91
TJR 01 Nov 91
DEM 05 Jan 95

NORTH CREEK ANALYTICAL

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RECEIVED JAN 1 9 1995

January 9, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

RE: JOB # BOX-11
P.O.# 31002
PROJECT - FAB-2

Enclosed are test results for your samples received in this lab on Jan. 05, 1995. For your reference, these analyses have been assigned our NCA # P501040.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

Please call if you have any questions.

Respectfully,

Howard Holmes
Project Manager

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TPH-D per Oregon DEQ
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501040
Matrix: soil
Sampled: 01/05/1995
Received: 01/05/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-510	P501040-1	Diesel/related	25,000	2000	01/05/95	01/06/95
Method Blank		Diesel/related	ND	25		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019200

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TCLP VOC's per EPA 1311, 8240

Results In mg/L (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501040
Matrix: soil
Sampled: 01/05/1995
Received: 01/05/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-510	P501040-1	Benzene	0.40	0.010	01/06/95	01/06/95
		Carbon Tetrachloride	ND	0.010		
		Chlorobenzene	ND	0.010		
		Chloroform	ND	0.010		
		1,4-Dichlorobenzene	ND	0.010		
		1,2-Dichloroethane	ND	0.010		
		1,1-Dichloroethene	ND	0.010		
		Methyl Ethyl Ketone	ND	0.038		
		Tetrachloroethene	ND	0.010		
		Trichloroethene	ND	0.010		
		Vinyl Chloride	ND	0.025		
Method Blank		Benzene	ND	0.0020		
		Carbon Tetrachloride	ND	0.0020		
		Chlorobenzene	ND	0.0020		
		Chloroform	ND	0.0020		
		1,4-Dichlorobenzene	ND	0.0020		
		1,2-Dichloroethane	ND	0.0020		
		1,1-Dichloroethene	ND	0.0020		
		Methyl Ethyl Ketone	ND	0.0075		
		Tetrachloroethene	ND	0.0020		
		Trichloroethene	ND	0.0020		
		Vinyl Chloride	ND	0.0050		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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SURROGATE RECOVERIES (%)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P501040
Received: 01/05/1995

Sample Name	Analyte	Result	Control Limits
TPH-D per Oregon DEQ			
95-510	1-Chlorooctadecane	-- *[1]	50-150
TCLP VOC's per EPA 1311, 8240			
95-510	4-Bromofluorobenzene	99	74-121
	1,2-Dichloroethane-d4	87	70-121
	Toluene-d8	99	81-117

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019202

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COMMENTS

Client:	Wacker Siltronic Corporation	NCA Number:	P501040
Project:	FAB-2	**Received:**	01/05/1995

1. Unable to calculate surrogate recovery due to matrix interference.

SCOEPA00019203

NORTH CREEK ANALYTICAL

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RECEIVED JAN 1 9 1995

January 9, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

Re: Requested Quality Control Data

Enclosed is the in-house quality control data you requested on NCA project number P501040.

Note: Method blank results and Surrogate Recoveries are included in the final report.

QUALITY CONTROL DEFINITIONS

METHOD BLANK RESULTS

A Method Blank is a laboratory-generated sample which assesses the degree to which laboratory operations and procedures cause false-positive analytical results for your sample.

No target parameters were detected in the method blank associated with your sample at the reporting limit levels noted on the data sheets in the final report.

SURROGATE STANDARD

A surrogate standard (i.e., a chemical compound not expected to occur in an environmental sample) is added to each sample, blank, and matrix spike sample just prior to extraction or processing. The recovery of the surrogate standard is used to monitor for unusual matrix effects, gross sample processing errors, etc. Surrogate recovery is evaluated for acceptance by determining whether the measured concentration falls within accepted limits.

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Accuracy is measured by percent recovery as in:

$$\% \text{ Recovery} = \frac{\text{(Measured Concentration)}}{\text{(Actual Concentration)}} \times 100$$

Precision is measured using duplicate tests by relative percent difference.

$$\text{RPD} = \frac{\text{(Result of Test 1 - Result of Test 2)}}{\text{(Result of Test 1 + Result of Test 2)/2}} \times 100$$

If you should have any questions concerning this report, please contact me.

Sincerely,

Howard Holmes
Project Manager

NORTH CREEK ANALYTICAL
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BATCH QUALITY CONTROL RESULTS
TPH-D per Oregon DEQ

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P501040
Received: 01/05/1995

METHOD BLANK
Batch # FC94044d
Results In mg/kg (ppm)

Compound	Result	MRL
Diesel/related	ND	25
Date Prepared	01/05/1995	
Date Analyzed	01/06/1995	

Surrogate Recovery (%)	Result	Control Limit
1-Chlorooctadecane	88	50-150

DUPLICATE
Batch # FC94044c **Spike ID**
Results In mg/kg (ppm)

Compound	Sample Conc	Dup Conc	RPD	QC Limit RPD
Diesel/related	1,000	1,600	47	50

LABORATORY CONTROL SAMPLE
Batch # FC94044a
Results In mg/kg (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Diesel/related	120	140	117	50-150

SCOEPA00019206

NORTH CREEK ANALYTICAL

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 1311, 8240

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501040
Received: 01/05/1995

METHOD BLANK
Batch # VZ95001a
Results In mg/L (ppm)

Compound	Result	MRL
Benzene	ND	0.0020
Carbon Tetrachloride	ND	0.0020
Chlorobenzene	ND	0.0020
Chloroform	ND	0.0020
1,4-Dichlorobenzene	ND	0.0020
1,2-Dichloroethane	ND	0.0020
1,1-Dichloroethene	ND	0.0020
Methyl Ethyl Ketone	ND	0.0075
Tetrachloroethene	ND	0.0020
Trichloroethene	ND	0.0020
Vinyl Chloride	ND	0.0050
Date Extracted	01/05/1995	
Date Prepared	01/06/1995	
Date Analyzed	01/06/1995	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	100	74-121
1,2-Dichloroethane-d4	87	70-121
Toluene-d8	98	81-117

SCOEPA00019207

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 1311, 8240

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P501040
Received: 01/05/1995

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # VZ95001a **Spike ID 94-4057-5a**
Results In mg/L (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS %Rec
Benzene	0.020	ND	0.0206	103
Chlorobenzene	0.020	ND	0.0206	103
1,1-Dichloroethene	0.020	ND	0.0188	94
Toluene	0.020	0.0382	0.0588	103
Trichloroethene	0.020	ND	0.0202	101

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
Benzene	0.020	0.0210	105	1.9	21	66-142
Chlorobenzene	0.020	0.0213	107	3.8	21	60-133
1,1-Dichloroethene	0.020	0.0194	97	3.1	22	59-172
Toluene	0.020	0.0590	104	0.97	21	59-139
Trichloroethene	0.020	0.0199	100	0.9950	24	62-137

SCOEPA00019208

NORTH CREEK ANALYTICAL

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East 11115 Montgomery, Suite B, Spokane, WA 98206-4779 (509) 924-9200 FAX 924-9290
15055 S.W. Sequoia Parkway, Suite 110, Portland, OR 97224-7155 (503) 624-9800 FAX 684-3782

CHAIN OF CUSTODY REPORT

CLIENT: Wacker Siltronic

ADDRESS: 7200 N.W. Front Ave
Portland, OR

PHONE: 243-2020 X-374 FAX: 241-7599

REPORT TO: Dianne Mullan
% T. Rothschild

BILLING TO:

P.O. NUMBER: 46998

NCA QUOTE #:

SAME DAY RUSH	(+150%)	X
NEXT BUSINESS DAY RUSH	(+100%)	
2 BUSINESS DAY RUSH	(+80%)	
3 BUSINESS DAY RUSH	(+60%)	
5 BUSINESS DAY RUSH	(+40%)	
10 BUSINESS DAY STANDARD	(LIST PRICE)	
5 BUS. DAY HYDROCARBONS	(LIST PRICE)	

PROJECT NAME: FAB-2

PROJECT NUMBER: BOX-11

SAMPLED BY: George Stevens Dianne Mullan

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	TPH-D	TCLP-8240	COMMENTS & PRESERVATIVES USED	NORTH CREEK SAMPLE NUMBER
1. 95-570	1-5-95/1440	S	2	X	X	held on ice	P501040-1
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							

RELINQUISHED BY: Dianne Mullan	DATE: 1-5-95	RECEIVED BY: [illegible] Pedersen	DATE: 1/5/95
FIRM: Wacker Siltronic	TIME: 1600	FIRM:	TIME: 1600
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
FIRM:	TIME:	FIRM:	TIME:

ADDITIONAL REMARKS:

PAGE OF

NORTH CREEK ANALYTICAL

18939 120th Avenue N.E., Suite 101 • Bothell, WA 98011-9508 (206) 481-9200 • FAX 485-2992
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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

INVOICE FOR ANALYTICAL SERVICES

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Accounts Payable

Project Manager: Dianne Mullan

Project: FAB-2, #BOX-11

Invoice Number: 25010055

Invoice Date: 01/09/95

P.O. #31002

Soil, Received 1/5/95

NCA Sample #: P501040

QTY	ANALYSES PERFORMED	T.A.T.	UNIT PRICE	NET AMOUNT
1	TPH-Diesel	1 Day	136.00	136.00
1	8240, Short List, Rush	1 Day	570.00	570.00

COPY

Invoice Total $ 706.00

```
*****************************************
*                                       *
* Remit To: North Creek Analytical, Inc. *
*           18939 - 120th Ave. NE  #101 *
*           Bothell, WA      98011-9508 *
*                                       *
*****************************************
```

TERMS: NET 30 DAYS
PAST DUE INVOICES ARE SUBJECT TO A 1.5% PER MONTH SERVICE CHARGE

SAMPLES SENT TO OUTSIDE LABORATORY

FAB-2

1. WSC#: 95- 515

2. Date/Time of Sample: 1-10-95 / 1315

3. Name of Sampler: George / Dennis

4. Sample Discription: Drop Box 12 ID# 4208 497

Other _____

5. Sent To: X North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

6. Analyses Required: VCLP 8240, TPH-D

7. Chain of Custody Submitted; (Yes) No

8. Purchase Order Number: 31002

9. Final Results Received On: _____

10. Additional Notes; _____

TJR 15 Nov 91
TJR 01 Nov 91
DEM 05 Jan 95

RESULTS RECEIVED LOG SHEET

BOX\MAP#: _____ **DATE SENT TO LAB:** _____

WSC#: _____ **LAB#:** _____

COMPLETE RESULTS IN: _____ **COPIES (3) MADE:** _____

Date In	Analyses	Date	Analyses

Common analyses done:

TCLP (8): Metals; As, Ba, Cd, Cr, Pb, Hg, Se, Ag
TCLP 1311-8150: 2, 4-D
TCLP 8240: Benzene

TCLP 8270:PAHS
TPH-G
TPH-D
TPH 418.1 (mod.)

Flash Point

Notes: _____

NORTH CREEK ANALYTICAL

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RECEIVED JAN 1 9 1995

January 13, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

RE: JOB # BOX-12
P.O.# 31002
PROJECT - FAB-2

Enclosed are test results for your samples received in this lab on Jan. 10, 1995. For your reference, these analyses have been assigned our NCA # P501094.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

Please call if you have any questions.

Respectfully,

Howard Holmes
Project Manager

NORTH CREEK ANALYTICAL

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TPH-D per Oregon DEQ
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501094
Matrix: soil
Sampled: 01/10/1995
Received: 01/10/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-515-Box 12	P501094-1	Diesel/related	30,000 *[1]	5000	01/10/95	01/10/95
Method Blank		Diesel/related	ND	25		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019214

NORTH CREEK ANALYTICAL

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TCLP VOC's per EPA 1311, 8240

Results In mg/L (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501094
Matrix: soil
Sampled: 01/10/1995
Received: 01/10/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-515-Box 12	P501094-1	Benzene	0.30	0.010	01/11/95	01/11/95
		Carbon Tetrachloride	ND	0.010		
		Chlorobenzene	ND	0.010		
		Chloroform	ND	0.010		
		1,4-Dichlorobenzene	ND	0.010		
		1,2-Dichloroethane	ND	0.010		
		1,1-Dichloroethene	ND	0.010		
		Methyl Ethyl Ketone	ND	0.038		
		Tetrachloroethene	ND	0.010		
		Trichloroethene	ND	0.010		
		Vinyl Chloride	ND	0.025		
Method Blank		Benzene	ND	0.0020		
		Carbon Tetrachloride	ND	0.0020		
		Chlorobenzene	ND	0.0020		
		Chloroform	ND	0.0020		
		1,4-Dichlorobenzene	ND	0.0020		
		1,2-Dichloroethane	ND	0.0020		
		1,1-Dichloroethene	ND	0.0020		
		Methyl Ethyl Ketone	ND	0.0075		
		Tetrachloroethene	ND	0.0020		
		Trichloroethene	ND	0.0020		
		Vinyl Chloride	ND	0.0050		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019215

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX-644-2202

SURROGATE RECOVERIES (%)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P501094
Received: 01/10/1995

Sample Name	Analyte	Result	Control Limits
TPH-D per Oregon DEQ			
95-515-Box 12	1-Chlorooctadecane	– *[2]	50-150
TCLP VOC's per EPA 1311, 8240			
95-515-Box 12	4-Bromofluorobenzene	99	74-121
	1,2-Dichloroethane-d4	88	70-121
	Toluene-d8	98	81-117

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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COMMENTS

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P501094
Received: 01/10/1995

1. Detection limit is raised due to matrix interference.

2. Unable to calculate surrogate recovery due to matrix interference.

SCOEPA00019217

NORTH CREEK ANALYTICAL

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RECEIVED JAN 1 9 1995

January 13, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

Re: Requested Quality Control Data

Enclosed is the in-house quality control data you requested on NCA project number P501094.

Note: Method blank results and Surrogate Recoveries are included in the final report.

QUALITY CONTROL DEFINITIONS

METHOD BLANK RESULTS

A Method Blank is a laboratory-generated sample which assesses the degree to which laboratory operations and procedures cause false-positive analytical results for your sample.

No target parameters were detected in the method blank associated with your sample at the reporting limit levels noted on the data sheets in the final report.

SURROGATE STANDARD

A surrogate standard (i.e., a chemical compound not expected to occur in an environmental sample) is added to each sample, blank, and matrix spike sample just prior to extraction or processing. The recovery of the surrogate standard is used to monitor for unusual matrix effects, gross sample processing errors, etc. Surrogate recovery is evaluated for acceptance by determining whether the measured concentration falls within accepted limits.

NORTH CREEK ANALYTICAL

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Accuracy is measured by percent recovery as in:

$$\% \text{ Recovery} = \frac{\text{(Measured Concentration)}}{\text{(Actual Concentration)}} \times 100$$

Precision is measured using duplicate tests by relative percent difference.

$$\text{RPD} = \frac{\text{(Result of Test 1 - Result of Test 2)}}{\text{(Result of Test 1 + Result of Test 2)/2}} \times 100$$

If you should have any questions concerning this report, please contact me.

Sincerely,

Howard Holmes
Project Manager

NORTH CREEK ANALYTICAL
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BATCH QUALITY CONTROL RESULTS
TPH-D per Oregon DEQ

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P501094
Received: 01/10/1995

METHOD BLANK
Batch # FC94044f
Results In mg/kg (ppm)

Compound	Result	MRL
Diesel/related	ND	25
Date Prepared	01/10/1995	
Date Analyzed	01/10/1995	

Surrogate Recovery (%)	Result	Control Limit
1-Chlorooctadecane	94	50-150

DUPLICATE
Batch # FC94044c
Results In mg/kg (ppm)

Compound	Sample Conc	Dup Conc	RPD	QC Limit RPD
Diesel/related	1,000	1,600	47	50

LABORATORY CONTROL SAMPLE
Batch # FC94044a
Results In mg/kg (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Diesel/related	120	140	117	50-150

SCOEPA00019220

NORTH CREEK ANALYTICAL

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 1311, 8240

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501094
Received: 01/10/1995

METHOD BLANK
Batch # VZ95001c
Results In mg/L (ppm)

Compound	Result	MRL
Benzene	ND	0.0020
Carbon Tetrachloride	ND	0.0020
Chlorobenzene	ND	0.0020
Chloroform	ND	0.0020
1,4-Dichlorobenzene	ND	0.0020
1,2-Dichloroethane	ND	0.0020
1,1-Dichloroethene	ND	0.0020
Methyl Ethyl Ketone	ND	0.0075
Tetrachloroethene	ND	0.0020
Trichloroethene	ND	0.0020
Vinyl Chloride	ND	0.0050
Date Extracted	01/10/1995	
Date Prepared	01/11/1995	
Date Analyzed	01/11/1995	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	100	74-121
1,2-Dichloroethane-d4	85	70-121
Toluene-d8	99	81-117

SCOEPA00019221

NORTH CREEK ANALYTICAL
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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 1311, 8240

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P501094
Received: 01/10/1995

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # VZ95001a **Spike ID 94-4057-5a**
Results In mg/L (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS %Rec
Benzene	0.020	ND	0.0206	103
Chlorobenzene	0.020	ND	0.0206	103
1,1-Dichloroethene	0.020	ND	0.0188	94
Toluene	0.020	0.0382	0.0588	103
Trichloroethene	0.020	ND	0.0202	101

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
Benzene	0.020	0.0210	105	1.9	21	66-142
Chlorobenzene	0.020	0.0213	107	3.8	21	60-133
1,1-Dichloroethene	0.020	0.0194	97	3.1	22	59-172
Toluene	0.020	0.0590	104	0.97	21	59-139
Trichloroethene	0.020	0.0199	100	0.9950	24	62-137

SCOEPA00019222

NORTH CREEK ANALYTICAL

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East 11115 Montgomery, Suite B, Spokane, WA 98206-4779 (509) 924-9200 FAX 924-9290
15055 S.W. Sequoia Parkway, Suite 110, Portland, OR 97224-7155 (503) 624-9800 FAX 684-3782

CHAIN OF CUSTODY REPORT

CLIENT: Wacker Siltronic
ADDRESS: 7200 N.W. Front Ave
Portland, OR
PHONE: 243-2020 x 374 FAX: 241-7599

REPORT TO: Dianne Mullen
BILLING TO:
P.O. NUMBER: 4 31002
NCA QUOTE #:

SAME DAY RUSH	(+150%)	X
NEXT BUSINESS DAY RUSH	(+100%)	
2 BUSINESS DAY RUSH	(+80%)	
3 BUSINESS DAY RUSH	(+60%)	
5 BUSINESS DAY RUSH	(+40%)	
10 BUSINESS DAY STANDARD	(LIST PRICE)	
5 BUS. DAY HYDROCARBONS	(LIST PRICE)	

PROJECT NAME: TAB-2
PROJECT NUMBER: 130X-12
SAMPLED BY: George Stevens, D. Mullen

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	Analysis Request: TCLP 8240	TPH-D	COMMENTS & PRESERVATIVES USED	NORTH CREEK SAMPLE NUMBER
1. 95-515-Box 12	1-10-95/1315	S	2	X	X	held on ice	P501094
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							

RECEIVED JAN 10 1995

RELINQUISHED BY: Dianne Mullen	DATE: 1/10/95	RECEIVED BY: Sara McClurg	DATE: 1/10/95
FIRM: Wacker Siltronic	TIME: 1530	FIRM: Sara McClurg	TIME: 1530
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
FIRM:	TIME:	FIRM:	TIME:

ADDITIONAL REMARKS:

PAGE OF

RESULTS RECEIVED
LOG SHEET

Sample: Box 13 **WSC#:** 95-514 **Lab#:**

Common analyses done:

TCLP (8): Metals; As, Ba, Cd, Cr, Pb, Hg, Se, Ag
TCLP 1311-8150: 2, 4-D
TCLP 8240: Benzene
TCLP 8270:PAHS
TPH-G
TPH-D
TPH 418.1 (mod.)
Flash Point

Copies: 2 = J. Linden (contractors) 1 = C. Bloomer

Copy	In	Analyses	Copy	In	Analyses
		TCLP 8240			
		TPH-D			

Notes:

SAMPLES SENT TO OUTSIDE LABORATORY
FAB-2

1. WSC#: 95- 511

2. Date/Time of Sample: 1-5-95 / 1440

3. Name of Sampler: George Steven Dianne Mullen

4. Sample Discription: Drop Box 13 ID# 910207

Other _____

5. Sent To: X North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

6. Analyses Required: TCLP 8240, TPH-D

7. Chain of Custody Submitted; Yes No

8. Purchase Order Number: 21698

9. Final Results Received On: _____

10. Additional Notes; _____

TJR 15 Nov 91
TJR 01 Nov 91
DEM 05 Jan 95

NORTH CREEK ANALYTICAL

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January 9, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

RE: JOB # BOX-13
P.O.# 31002
PROJECT - FAB-2

Enclosed are test results for your samples received in this lab on Jan. 05, 1995. For your reference, these analyses have been assigned our NCA # P501041.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

Please call if you have any questions.

Respectfully,

Howard Holmes
Project Manager

NORTH CREEK ANALYTICAL

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TPH-D per Oregon DEQ
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501041
Matrix: soil
Sampled: 01/05/1995
Received: 01/05/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-511	P501041-1	Diesel/related	8,900	500	01/05/95	01/06/95
Method Blank		Diesel/related	ND	25		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019227

NORTH CREEK ANALYTICAL

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TCLP VOC's per EPA 1311, 8240

Results In mg/L (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501041
Matrix: soil
Sampled: 01/05/1995
Received: 01/05/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-511	P501041-1	Benzene	0.18	0.010	01/06/95	01/06/95
		Carbon Tetrachloride	ND	0.010		
		Chlorobenzene	ND	0.010		
		Chloroform	ND	0.010		
		1,4-Dichlorobenzene	ND	0.010		
		1,2-Dichloroethane	ND	0.010		
		1,1-Dichloroethene	ND	0.010		
		Methyl Ethyl Ketone	ND	0.038		
		Tetrachloroethene	ND	0.010		
		Trichloroethene	ND	0.010		
		Vinyl Chloride	ND	0.025		
Method Blank		Benzene	ND	0.0020		
		Carbon Tetrachloride	ND	0.0020		
		Chlorobenzene	ND	0.0020		
		Chloroform	ND	0.0020		
		1,4-Dichlorobenzene	ND	0.0020		
		1,2-Dichloroethane	ND	0.0020		
		1,1-Dichloroethene	ND	0.0020		
		Methyl Ethyl Ketone	ND	0.0075		
		Tetrachloroethene	ND	0.0020		
		Trichloroethene	ND	0.0020		
		Vinyl Chloride	ND	0.0050		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

NORTH CREEK ANALYTICAL

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SURROGATE RECOVERIES (%)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P501041
Received: 01/05/1995

Sample Name	Analyte	Result	Control Limits
TPH-D per Oregon DEQ			
95-511	1-Chlorooctadecane	– *[1]	50-150
TCLP VOC's per EPA 1311, 8240			
95-511	4-Bromofluorobenzene	99	74-121
	1,2-Dichloroethane-d4	86	70-121
	Toluene-d8	100	81-117

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019229

NORTH CREEK ANALYTICAL

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COMMENTS

Client:	Wacker Siltronic Corporation	NCA Number:	P501041
Project:	FAB-2	**Received:**	01/05/1995

1. Unable to calculate surrogate recovery due to matrix interference.

SCOEPA00019230

NORTH CREEK ANALYTICAL

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January 9, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

Re: Requested Quality Control Data

Enclosed is the in-house quality control data you requested on NCA project number P501041.

Note: Method blank results and Surrogate Recoveries are included in the final report.

QUALITY CONTROL DEFINITIONS

METHOD BLANK RESULTS

A Method Blank is a laboratory-generated sample which assesses the degree to which laboratory operations and procedures cause false-positive analytical results for your sample.

No target parameters were detected in the method blank associated with your sample at the reporting limit levels noted on the data sheets in the final report.

SURROGATE STANDARD

A surrogate standard (i.e., a chemical compound not expected to occur in an environmental sample) is added to each sample, blank, and matrix spike sample just prior to extraction or processing. The recovery of the surrogate standard is used to monitor for unusual matrix effects, gross sample processing errors, etc. Surrogate recovery is evaluated for acceptance by determining whether the measured concentration falls within accepted limits.

NORTH CREEK ANALYTICAL

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East 11115 Montgomery, Suite B • Spokane, WA 99206-4776 (509) 924-9200 • FAX 924-9290
9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

Accuracy is measured by percent recovery as in:

$$\% \text{ Recovery} = \frac{\text{(Measured Concentration)}}{\text{(Actual Concentration)}} \times 100$$

Precision is measured using duplicate tests by relative percent difference.

$$\text{RPD} = \frac{\text{(Result of Test 1 - Result of Test 2)}}{\text{(Result of Test 1 + Result of Test 2)/2}} \times 100$$

If you should have any questions concerning this report, please contact me.

Sincerely,

Howard Holmes
Project Manager

NORTH CREEK ANALYTICAL
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BATCH QUALITY CONTROL RESULTS
TPH-D per Oregon DEQ

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P501041
Received: 01/05/1995

METHOD BLANK
Batch # FC94044d
Results In mg/kg (ppm)

Compound	Result	MRL
Diesel/related	ND	25
Date Prepared	01/05/1995	
Date Analyzed	01/06/1995	

Surrogate Recovery (%)	Result	Control Limit
1-Chlorooctadecane	88	50-150

DUPLICATE
Batch # FC94044c
Results In mg/kg (ppm)

Compound	Sample Conc	Dup Conc	RPD	QC Limit RPD
Diesel/related	1,000	1,600	47	50

LABORATORY CONTROL SAMPLE
Batch # FC94044a
Results In mg/kg (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Diesel/related	120	140	117	50-150

SCOEPA00019233

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 1311, 8240

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P501041
Received: 01/05/1995

METHOD BLANK
Batch # VZ95001a
Results In mg/L (ppm)

Compound	Result	MRL
Benzene	ND	0.0020
Carbon Tetrachloride	ND	0.0020
Chlorobenzene	ND	0.0020
Chloroform	ND	0.0020
1,4-Dichlorobenzene	ND	0.0020
1,2-Dichloroethane	ND	0.0020
1,1-Dichloroethene	ND	0.0020
Methyl Ethyl Ketone	ND	0.0075
Tetrachloroethene	ND	0.0020
Trichloroethene	ND	0.0020
Vinyl Chloride	ND	0.0050
Date Extracted	01/05/1995	
Date Prepared	01/06/1995	
Date Analyzed	01/06/1995	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	100	74-121
1,2-Dichloroethane-d4	87	70-121
Toluene-d8	98	81-117

SCOEPA00019234

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 1311, 8240

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P501041
Received: 01/05/1995

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # VZ95001a **Spike ID 94-4057-5a**
Results In mg/L (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS %Rec
Benzene	0.020	ND	0.0206	103
Chlorobenzene	0.020	ND	0.0206	103
1,1-Dichloroethene	0.020	ND	0.0188	94
Toluene	0.020	0.0382	0.0588	103
Trichloroethene	0.020	ND	0.0202	101

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
Benzene	0.020	0.0210	105	1.9	21	66-142
Chlorobenzene	0.020	0.0213	107	3.8	21	60-133
1,1-Dichloroethene	0.020	0.0194	97	3.1	22	59-172
Toluene	0.020	0.0590	104	0.97	21	59-139
Trichloroethene	0.020	0.0199	100	0.9950	24	62-137

SCOEPA00019235

NORTH CREEK ANALYTICAL

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15055 S.W. Sequoia Parkway, Suite 110, Portland, OR 97224-7155 (503) 624-9800 FAX 684-3782

CHAIN OF CUSTODY REPORT

CLIENT: Wacker-Siltronic
ADDRESS: 7200 N.W. Front Ave, Portland, OR
PHONE: 243-2020 x-374 FAX:

REPORT TO: Dianne Mullen
BILLING TO:
P.O. NUMBER: 46998
NCA QUOTE #:

SAME DAY RUSH	(+150%)	X
NEXT BUSINESS DAY RUSH	(+100%)	
2 BUSINESS DAY RUSH	(+80%)	
3 BUSINESS DAY RUSH	(+60%)	
5 BUSINESS DAY RUSH	(+40%)	
10 BUSINESS DAY STANDARD	(LIST PRICE)	
5 BUS. DAY HYDROCARBONS	(LIST PRICE)	

PROJECT NAME: 7A13-2
PROJECT NUMBER: Box-13
SAMPLED BY: George Steven, Dianne Mullen

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	TCLP 8240	TPH-D	COMMENTS & PRESERVATIVES USED	NORTH CREEK SAMPLE NUMBER
1. 95-511	1-5-95/1440	S	2	X	X	held on ice.	P501041-1
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							

RELINQUISHED BY: Dianne Mullen	DATE: 1-5-95	RECEIVED BY: C. Pederson	DATE: 1/5/95
FIRM: Wacker Siltronic	TIME: 1600	FIRM:	TIME: 1600
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
FIRM:	TIME:	FIRM:	TIME:

ADDITIONAL REMARKS:

PAGE OF

SCOEPA00019236

NORTH CREEK ANALYTICAL

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15055 S.W. Sequoia Parkway, Suite 110, Portland, OR 97224-7155 (503) 624-9800 FAX 684-3782

CHAIN OF CUSTODY REPORT

CLIENT: Wacker-Siltronic
ADDRESS: 7200 N.W. Front Ave, Portland, OR
PHONE: 243-2020 x-374 FAX:

REPORT TO: Dianne Mullen
BILLING TO:
P.O. NUMBER: ~~46998~~ 31002
NCA QUOTE #:

SAME DAY RUSH	(+150%)	X
NEXT BUSINESS DAY RUSH	(+100%)	
2 BUSINESS DAY RUSH	(+80%)	
3 BUSINESS DAY RUSH	(+60%)	
5 BUSINESS DAY RUSH	(+40%)	
10 BUSINESS DAY STANDARD	(LIST PRICE)	
5 BUS. DAY HYDROCARBONS	(LIST PRICE)	

PROJECT NAME: 7A13-2
PROJECT NUMBER: BOX-13
SAMPLED BY: George Stevens, Dianne Mullen

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	TCLP 8240	TPH-D	COMMENTS & PRESERVATIVES USED	NORTH CREEK SAMPLE NUMBER
1. 95-511	1-5-95/1440	S	2	X	X	held on ice.	P501041-1
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							

RELINQUISHED BY: Dianne Mullen	DATE: 1-5-95	RECEIVED BY: D.C. Pederson	DATE: 1/5/95
FIRM: Wacker Siltronic	TIME: 1600	FIRM:	TIME: 1600
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
FIRM:	TIME:	FIRM:	TIME:

ADDITIONAL REMARKS:

PAGE OF

RESULTS RECEIVED

Common analyses done:

TCLP (8): Metals; As, Ba, Cd, Cr, Pb, Hg, Se, Ag
TCLP 1311-8150: 2, 4-D
TCLP 8240: Benzene

TCLP 8270:PAHS
TPH-G
TPH-D
TPH 418.1 (mod.)

Flash Point

Analyses Requested: **Copies to J. Linden / C. Bloomer**

Copy	In	Analyses	Copy	In	Analyses
		✓TCLP 8240			
		TPH-D			

Notes:

SAMPLES SENT TO OUTSIDE LABORATORY
FAB-2

1. WSC#: 95-512

2. Date/Time of Sample: 1-6-95 / 1230

3. Name of Sampler: Gary Kent

4. Sample Discription: Drop Box 14 ID# 174

Other _____

5. Sent To: ✓ North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

6. Analyses Required: TCLP 8240, TPH-D

7. Chain of Custody Submitted; Yes No

8. Purchase Order Number: _____

9. Final Results Received On: _____

10. Additional Notes; _____

TJR 15 Nov 91
TJR 01 Nov 91
DEM 05 Jan 95

NORTH CREEK ANALYTICAL

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RECEIVED

RECEIVED JAN 1 9 1995

January 11, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

RE: JOB # BOX-14
P.O.# 31002
PROJECT - FAB-2

Enclosed are test results for your samples received in this lab on Jan. 06, 1995. For your reference, these analyses have been assigned our NCA # P501056.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

Please call if you have any questions.

Respectfully,

Howard Holmes
Project Manager

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TPH-D per Oregon DEQ
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501056
Matrix: soil
Sampled: 01/06/1995
Received: 01/06/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-512	P501056-1	Diesel/related	3,800	250	01/06/95	01/07/95
Method Blank		Diesel/related	ND	25		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019241

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TCLP VOC's per EPA 8240
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501056
Matrix: soil
Sampled: 01/06/1995
Received: 01/06/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-512	P501056-1	Benzene	ND	0.010	01/06/95	01/06/95
		Carbon Tetrachloride	ND	0.010		
		Chlorobenzene	ND	0.010		
		Chloroform	ND	0.010		
		1,4-Dichlorobenzene	ND	0.010		
		1,2-Dichloroethane	ND	0.010		
		1,1-Dichloroethene	ND	0.010		
		Methyl Ethyl Ketone	ND	0.038		
		Tetrachloroethene	ND	0.010		
		Trichloroethene	ND	0.010		
		Vinyl Chloride	ND	0.025		
Method Blank		Benzene	ND	0.0020		
		Carbon Tetrachloride	ND	0.0020		
		Chlorobenzene	ND	0.0020		
		Chloroform	ND	0.0020		
		1,4-Dichlorobenzene	ND	0.0020		
		1,2-Dichloroethane	ND	0.0020		
		1,1-Dichloroethene	ND	0.0020		
		Methyl Ethyl Ketone	ND	0.0075		
		Tetrachloroethene	ND	0.0020		
		Trichloroethene	ND	0.0020		
		Vinyl Chloride	ND	0.0050		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019242

NORTH CREEK ANALYTICAL

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SURROGATE RECOVERIES (%)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P501056
Received: 01/06/1995

Sample Name	Analyte	Result	Control Limits
TPH-D per Oregon DEQ			
95-512	1-Chlorooctadecane	– *[1]	50-150
TCLP VOC's per EPA 1311, 8240			
95-512	4-Bromofluorobenzene	93	74-121
	1,2-Dichloroethane-d4	100	70-121
	Toluene-d8	95	81-117

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019243

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COMMENTS

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P501056
Received: 01/06/1995

1. Unable to calculate surrogate recovery due to matrix interference.

SCOEPA00019244

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January 11, 1995

RECEIVED JAN 1 9 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

Re: Requested Quality Control Data

Enclosed is the in-house quality control data you requested on NCA project number P501056.

Note: Method blank results and Surrogate Recoveries are included in the final report.

QUALITY CONTROL DEFINITIONS

METHOD BLANK RESULTS

A Method Blank is a laboratory-generated sample which assesses the degree to which laboratory operations and procedures cause false-positive analytical results for your sample.

No target parameters were detected in the method blank associated with your sample at the reporting limit levels noted on the data sheets in the final report.

SURROGATE STANDARD

A surrogate standard (i.e., a chemical compound not expected to occur in an environmental sample) is added to each sample, blank, and matrix spike sample just prior to extraction or processing. The recovery of the surrogate standard is used to monitor for unusual matrix effects, gross sample processing errors, etc. Surrogate recovery is evaluated for acceptance by determining whether the measured concentration falls within accepted limits.

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Accuracy is measured by percent recovery as in:

$$\% \text{ Recovery} = \frac{\text{(Measured Concentration)}}{\text{(Actual Concentration)}} \times 100$$

Precision is measured using duplicate tests by relative percent difference.

$$\text{RPD} = \frac{\text{(Result of Test 1 - Result of Test 2)}}{\text{(Result of Test 1 + Result of Test 2)/2}} \times 100$$

If you should have any questions concerning this report, please contact me.

Sincerely,

Howard Holmes
Project Manager

NORTH CREEK ANALYTICAL
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BATCH QUALITY CONTROL RESULTS
TPH-D per Oregon DEQ

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P501056
Received: 01/06/1995

METHOD BLANK
Batch # FC94044e
Results In mg/kg (ppm)

Compound	Result	MRL
Diesel/related	ND	25
Date Prepared	01/06/1995	
Date Analyzed	01/07/1995	

Surrogate Recovery (%)	Result	Control Limit
1-Chlorooctadecane	113	50-150

DUPLICATE
Batch # FC94044c
Results In mg/kg (ppm)

Compound	Sample Conc	Dup Conc	RPD	QC Limit RPD
Diesel/related	1,000	1,600	47	50

LABORATORY CONTROL SAMPLE
Batch # FC94044a
Results In mg/kg (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Diesel/related	120	140	117	50-150

SCOEPA00019247

NORTH CREEK ANALYTICAL
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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P501056
Received: 01/06/1995

METHOD BLANK
Batch # VS95001b
Results In mg/kg (ppm)

Compound	Result	MRL
Benzene	ND	0.0020
Carbon Tetrachloride	ND	0.0020
Chlorobenzene	ND	0.0020
Chloroform	ND	0.0020
1,4-Dichlorobenzene	ND	0.0020
1,2-Dichloroethane	ND	0.0020
1,1-Dichloroethene	ND	0.0020
Methyl Ethyl Ketone	ND	0.0075
Tetrachloroethene	ND	0.0020
Trichloroethene	ND	0.0020
Vinyl Chloride	ND	0.0050
Date Prepared	01/06/1995	
Date Analyzed	01/06/1995	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	98	74-121
1,2-Dichloroethane-d4	101	70-121
Toluene-d8	100	81-117

SCOEPA00019248

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P501056
Received: 01/06/1995

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # VS95001a **Spike ID P501016-4a**
Results In mg/kg (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS %Rec
Benzene	0.020	ND	0.0222	111
Chlorobenzene	0.020	ND	0.0210	105
1,1-Dichloroethene	0.020	ND	0.0195	98
Toluene	0.020	ND	0.0199	100
Trichloroethene	0.020	ND	0.0194	97

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
Benzene	0.020	0.0206	103	7.5	21	66-142
Chlorobenzene	0.020	0.0186	93	13	21	60-133
1,1-Dichloroethene	0.020	0.0174	87	12	22	59-172
Toluene	0.020	0.0179	90	11	21	59-139
Trichloroethene	0.020	0.0174	87	11	24	62-137

SCOEPA00019249

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15055 S.W. Sequoia Parkway, Suite 110, Portland, OR 97224-7155 (503) 624-9800 FAX 684-3782

CHAIN OF CUSTODY REPORT

CLIENT: Wacker Siltronic
ADDRESS: 7200 N.W. Front Ave
Portland, OR
PHONE: 243-2020 x-374 FAX:

REPORT TO: Dianne Mullen
BILLING TO:
P.O. NUMBER: 31002
NCA QUOTE #:

SAME DAY RUSH	(+150%)	X
NEXT BUSINESS DAY RUSH	(+100%)	
2 BUSINESS DAY RUSH	(+80%)	
3 BUSINESS DAY RUSH	(+60%)	
5 BUSINESS DAY RUSH	(+40%)	
10 BUSINESS DAY STANDARD	(LIST PRICE)	
5 BUS. DAY HYDROCARBONS	(LIST PRICE)	

PROJECT NAME: FAB-2
PROJECT NUMBER: 30X-14
SAMPLED BY: Dianne E Mullen Gary Kent

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	TCLP-8240	TPH-D	COMMENTS & PRESERVATIVES USED	NORTH CREEK SAMPLE NUMBER
1. 95-512	1-6-95/1230	S	2	X	X	Kept on Ice	P501056-1
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							

RELINQUISHED BY: Dianne E Mullen	DATE: 1-6-95	RECEIVED BY: Sara Mc Clurg	DATE: 1-6-95
FIRM: Wacker Siltronic	TIME: 1535	FIRM: Sara Mc Clurg	TIME: 1535
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
FIRM:	TIME:	FIRM:	TIME:

ADDITIONAL REMARKS:

PAGE OF

SCOEPA00019250

NORTH CREEK ANALYTICAL

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INVOICE FOR ANALYTICAL SERVICES

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Accounts Payable

Project Manager: Dianne Mullan

Project: FAB-2, #BOX-14

Invoice Number: 25010050

Invoice Date: 01/11/95

P.O. #31002

Soil, Received 1/6/95

NCA Sample #: P501056

QTY	ANALYSES PERFORMED	T.A.T.	UNIT PRICE	NET AMOUNT
1	TPH-Diesel	1 Day	136.00	136.00
1	ZHE 8240 Rush	1 Day	390.00	390.00

COPY

Invoice Total $ 526.00

```
*****************************************
*                                       *
* Remit To: North Creek Analytical, Inc. *
*           18939 - 120th Ave. NE  #101 *
*           Bothell, WA      98011-9508 *
*                                       *
*****************************************
```

TERMS: NET 30 DAYS
PAST DUE INVOICES ARE SUBJECT TO A 1.5% PER MONTH SERVICE CHARGE

SAMPLES SENT TO OUTSIDE LABORATORY
FAB-2

1. WSC#: 95- 513

2. Date/Time of Sample: 1-6-95 / 1230

3. Name of Sampler: Gary Kent & Dianne Mullan

4. Sample Discription: Drop Box 15 ID# 910212

Other _____

5. Sent To: X North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

6. Analyses Required: TCLP 8240, TPH-D

7. Chain of Custody Submitted; Yes No

8. Purchase Order Number: 31002

9. Final Results Received On: _____

10. Additional Notes; _____

TJR 15 Nov 91
TJR 01 Nov 91
DEM 05 Jan 95

NORTH CREEK ANALYTICAL

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RECEIVED JAN 1 9 1995

January 11, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

RE: JOB # BOX-15
P.O.# 31002
PROJECT - FAB-2

Enclosed are test results for your samples received in this lab on Jan. 06, 1995. For your reference, these analyses have been assigned our NCA # P501057.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

Please call if you have any questions.

Respectfully,

Howard Holmes
Project Manager

NORTH CREEK ANALYTICAL

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TPH-D per Oregon DEQ
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501057
Matrix: soil
Sampled: 01/06/1995
Received: 01/06/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-513	P501057-1	Diesel/related	2,400	250	01/06/95	01/07/95
Method Blank		Diesel/related	ND	25		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019254

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TCLP VOC's per EPA 8240
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501057
Matrix: soil
Sampled: 01/06/1995
Received: 01/06/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-513	P501057-1	Benzene	0.018	0.010	01/06/95	01/06/95
		Carbon Tetrachloride	ND	0.010		
		Chlorobenzene	ND	0.010		
		Chloroform	ND	0.010		
		1,4-Dichlorobenzene	ND	0.010		
		1,2-Dichloroethane	ND	0.010		
		1,1-Dichloroethene	ND	0.010		
		Methyl Ethyl Ketone	ND	0.038		
		Tetrachloroethene	ND	0.010		
		Trichloroethene	ND	0.010		
		Vinyl Chloride	ND	0.025		
Method Blank		Benzene	ND	0.0020		
		Carbon Tetrachloride	ND	0.0020		
		Chlorobenzene	ND	0.0020		
		Chloroform	ND	0.0020		
		1,4-Dichlorobenzene	ND	0.0020		
		1,2-Dichloroethane	ND	0.0020		
		1,1-Dichloroethene	ND	0.0020		
		Methyl Ethyl Ketone	ND	0.0075		
		Tetrachloroethene	ND	0.0020		
		Trichloroethene	ND	0.0020		
		Vinyl Chloride	ND	0.0050		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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SURROGATE RECOVERIES (%)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P501057
Received: 01/06/1995

Sample Name	Analyte	Result	Control Limits
TPH-D per Oregon DEQ			
95-513	1-Chlorooctadecane	– *[1]	50-150
TCLP VOC's per EPA 1311, 8240			
95-513	4-Bromofluorobenzene	93	74-121
	1,2-Dichloroethane-d4	100	70-121
	Toluene-d8	98	81-117

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019256

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COMMENTS

Client:	Wacker Siltronic Corporation	NCA Number:	P501057
Project:	FAB-2	**Received:**	01/06/1995

1. Unable to calculate surrogate recovery due to matrix interference.

SCOEPA00019257

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RECEIVED JAN 1 9 1995

January 11, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

Re: Requested Quality Control Data

Enclosed is the in-house quality control data you requested on NCA project number P501057.

Note: Method blank results and Surrogate Recoveries are included in the final report.

QUALITY CONTROL DEFINITIONS

METHOD BLANK RESULTS

A Method Blank is a laboratory-generated sample which assesses the degree to which laboratory operations and procedures cause false-positive analytical results for your sample.

No target parameters were detected in the method blank associated with your sample at the reporting limit levels noted on the data sheets in the final report.

SURROGATE STANDARD

A surrogate standard (i.e., a chemical compound not expected to occur in an environmental sample) is added to each sample, blank, and matrix spike sample just prior to extraction or processing. The recovery of the surrogate standard is used to monitor for unusual matrix effects, gross sample processing errors, etc. Surrogate recovery is evaluated for acceptance by determining whether the measured concentration falls within accepted limits.

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Accuracy is measured by percent recovery as in:

$$\% \text{ Recovery} = \frac{\text{(Measured Concentration)}}{\text{(Actual Concentration)}} \times 100$$

Precision is measured using duplicate tests by relative percent difference.

$$\text{RPD} = \frac{\text{(Result of Test 1 - Result of Test 2)}}{\text{(Result of Test 1 + Result of Test 2)/2}} \times 100$$

If you should have any questions concerning this report, please contact me.

Sincerely,

Howard Holmes
Project Manager

NORTH CREEK ANALYTICAL
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BATCH QUALITY CONTROL RESULTS
TPH-D per Oregon DEQ

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P501057
Received: 01/06/1995

METHOD BLANK
Batch # FC94044e
Results In mg/kg (ppm)

Compound	Result	MRL
Diesel/related	ND	25
Date Prepared	01/06/1995	
Date Analyzed	01/07/1995	

Surrogate Recovery (%)	Result	Control Limit
1-Chlorooctadecane	113	50-150

DUPLICATE
Batch # FC94044c
Results In mg/kg (ppm)

Compound	Sample Conc	Dup Conc	RPD	QC Limit RPD
Diesel/related	1,000	1,600	47	50

LABORATORY CONTROL SAMPLE
Batch # FC94044a
Results In mg/kg (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Diesel/related	120	140	117	50-150

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501057
Received: 01/06/1995

METHOD BLANK
Batch # VS95001b
Results In mg/kg (ppm)

Compound	Result	MRL
Benzene	ND	0.0020
Carbon Tetrachloride	ND	0.0020
Chlorobenzene	ND	0.0020
Chloroform	ND	0.0020
1,4-Dichlorobenzene	ND	0.0020
1,2-Dichloroethane	ND	0.0020
1,1-Dichloroethene	ND	0.0020
Methyl Ethyl Ketone	ND	0.0075
Tetrachloroethene	ND	0.0020
Trichloroethene	ND	0.0020
Vinyl Chloride	ND	0.0050
Date Prepared	01/06/1995	
Date Analyzed	01/06/1995	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	98	74-121
1,2-Dichloroethane-d4	101	70-121
Toluene-d8	100	81-117

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P501057
Received: 01/06/1995

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # VS95001a **Spike ID P501016-4a**
Results In mg/kg (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS %Rec
Benzene	0.020	ND	0.0222	111
Chlorobenzene	0.020	ND	0.0210	105
1,1-Dichloroethene	0.020	ND	0.0195	98
Toluene	0.020	ND	0.0199	100
Trichloroethene	0.020	ND	0.0194	97

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
Benzene	0.020	0.0206	103	7.5	21	66-142
Chlorobenzene	0.020	0.0186	93	13	21	60-133
1,1-Dichloroethene	0.020	0.0174	87	12	22	59-172
Toluene	0.020	0.0179	90	11	21	59-139
Trichloroethene	0.020	0.0174	87	11	24	62-137

SCOEPA00019262

NORTH CREEK ANALYTICAL

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15055 S.W. Sequoia Parkway, Suite 110, Portland, OR 97224-7155 (503) 624-9800 FAX 684-3782

CHAIN OF CUSTODY REPORT

CLIENT: Wacker Siltronic
ADDRESS: 7200 N.W. Front Ave
Portland, OR
PHONE: 243-2020 x-374 FAX:

REPORT TO: Dianne Mullen
BILLING TO:
P.O. NUMBER: 31002
NCA QUOTE #:

SAME DAY RUSH	(+150%)	
NEXT BUSINESS DAY RUSH	(+100%)	
2 BUSINESS DAY RUSH	(+80%)	
3 BUSINESS DAY RUSH	(+60%)	
5 BUSINESS DAY RUSH	(+40%)	
10 BUSINESS DAY STANDARD	(LIST PRICE)	
5 BUS. DAY HYDROCARBONS	(LIST PRICE)	

PROJECT NAME: FAB-2
PROJECT NUMBER: BOX-15
SAMPLED BY: Gary Kent, Dianne Mullen

Analysis Request: TCLP 8240 / TPH-D

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	COMMENTS & PRESERVATIVES USED	NORTH CREEK SAMPLE NUMBER
1. 95-513 (15)	1-6-95 1230	S	2		P5010571
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					

RECEIVED JAN 19 1995

RELINQUISHED BY: Dianne E Mullen DATE: 1-6-95
FIRM: Wacker Siltronic TIME: 1535

RECEIVED BY: Sara McClurg DATE: 1-6-95
FIRM: Sara McClurg TIME: 1535

RELINQUISHED BY: DATE:
FIRM: TIME:

RECEIVED BY: DATE:
FIRM: TIME:

ADDITIONAL REMARKS:

PAGE OF

SCOEPA00019263

NORTH CREEK ANALYTICAL

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INVOICE FOR ANALYTICAL SERVICES

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Accounts Payable

Project Manager: Dianne Mullan

Project: FAB-2

Invoice Number: 25010051

Invoice Date: 01/11/95

P.O. #31002

Soil, Received 1/6/95

NCA Sample #: P501057

QTY	ANALYSES PERFORMED	T.A.T.	UNIT PRICE	NET AMOUNT
1	TPH-Diesel	1 Day	136.00	136.00
1	GC/MS Volatiles, Rush	1 Day	390.00	390.00

RECEIVED

COPY

Invoice Total $ 526.00

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*****************************************
*                                       *
* Remit To: North Creek Analytical, Inc. *
*           18939 - 120th Ave. NE  #101 *
*           Bothell, WA      98011-9508 *
*                                       *
*****************************************
```

TERMS: NET 30 DAYS
PAST DUE INVOICES ARE SUBJECT TO A 1.5% PER MONTH SERVICE CHARGE

RESULTS RECEIVED

Common analyses done:

TCLP (8): Metals; As, Ba, Cd, Cr, Pb, Hg, Se, Ag
TCLP 1311-8150: 2, 4-D
TCLP 8240: Benzene

TCLP 8270:PAHS
TPH-G
TPH-D
TPH 418.1 (mod.)

Flash Point

Analyses Requested: **Copies to J. Linden / C. Bloomer**

Copy	In	Analyses	Copy	In	Analyses
		JCLP 8240			
		TPH-D			

Notes:

SAMPLES SENT TO OUTSIDE LABORATORY
FAB-2

1. WSC#: 95-520

2. Date/Time of Sample: 1-17-95 / 1350

3. Name of Sampler: Olom Philavanh, Danny Mullan

4. Sample Discription: Drop Box 16 ID#

Other

5. Sent To: ✓ North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

6. Analyses Required: TCLP-8240, TPH-D

7. Chain of Custody Submitted; Yes No

8. Purchase Order Number: 31002

9. Final Results Received On:

10. Additional Notes;

TJR 15 Nov 91
TJR 01 Nov 91
DEM 05 Jan 95

NORTH CREEK ANALYTICAL

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15055 S.W. Sequoia Parkway, Suite 110, Portland, OR 97224-7155 (503) 624-9800 FAX 684-3782

CHAIN OF CUSTODY REPORT

CLIENT: Wacker Siltronic
ADDRESS: 7200 N.W. Front Ave Portland, Ore
PHONE: 243-2020 x-37 FAX: 241-7599

REPORT TO: Dianne E Mullan

BILLING TO:
P.O. NUMBER: 31002
NCA QUOTE #:

SAME DAY RUSH	(+150%)	
NEXT BUSINESS DAY RUSH	(+100%)	
2 BUSINESS DAY RUSH	(+80%)	X
3 BUSINESS DAY RUSH	(+60%)	
5 BUSINESS DAY RUSH	(+40%)	
10 BUSINESS DAY STANDARD	(LIST PRICE)	
5 BUS. DAY HYDROCARBONS	(LIST PRICE)	

PROJECT NAME: FAB-2
PROJECT NUMBER: Box-6, 16, 19, 21
SAMPLED BY: Odom Phila Vanh Dianne Mullan

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	TCLP 8240	TPH-D	COMMENTS & PRESERVATIVES USED	NORTH CREEK SAMPLE NUMBER
1. 95-519 - Box-6	1-17-95/1350	S	2	X	X	all samples	
2. 95-520 - Box-16	1-17-95/1350	S	2	X	X	held on ice	
3. 95-521 - Box-19	1-17-95/1350	S	2	X	X		
4. 95-522 - Box-21	1-17-95/1350	S	2	X	X		
5.							
6.							
7.							
8.							
9.							
10.							

RELINQUISHED BY: Dianne Mullan	DATE: 1/17/95	RECEIVED BY: S Pedersen	DATE: 1/17/95
FIRM: Wacker Siltronic	TIME: 1605	FIRM: NCA	TIME: 1605
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
FIRM:	TIME:	FIRM:	TIME:

ADDITIONAL REMARKS:

PAGE OF

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NORTH CREEK ANALYTICAL

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

January 20, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

RE: JOB # Box-6, 16, 19, 21
P.O.# 31002
PROJECT - FAB-2

Enclosed are test results for your samples received in this lab on Jan. 17, 1995. For your reference, these analyses have been assigned our NCA # P501176.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

Please call if you have any questions.

Respectfully,

Howard Holmes
Project Manager

NORTH CREEK ANALYTICAL
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TPH-D per Oregon DEQ
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501176
Matrix: soil
Sampled: 01/17/1995
Received: 01/17/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-519-Box-6	P501176-1	Diesel/related	25,000	1000	01/17/95	01/18/95
95-520-Box-16	P501176-2	Diesel/related	1,500	250	01/17/95	01/18/95
95-521-Box-19	P501176-3	Diesel/related	3,900	250	01/17/95	01/19/95
95-522-Box-21	P501176-4	Diesel/related	790	130	01/17/95	01/18/95
Method Blank		Diesel/related	ND	25		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019269

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TCLP VOC's per EPA 1311, 8240
Results In mg/L (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501176
Matrix: soil
Sampled: 01/17/1995
Received: 01/17/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-519-Box-6	P501176-1	Benzene	0.92	0.020	01/19/95	01/19/95
		Carbon Tetrachloride	ND	0.020		
		Chlorobenzene	ND	0.020		
		Chloroform	ND	0.020		
		1,4-Dichlorobenzene	ND	0.020		
		1,2-Dichloroethane	ND	0.020		
		1,1-Dichloroethene	ND	0.020		
		Methyl Ethyl Ketone	ND	0.10		
		Tetrachloroethene	ND	0.020		
		Trichloroethene	ND	0.020		
		Vinyl Chloride	ND	0.050		
95-520-Box-16	P501176-2	Benzene	0.019	0.010	01/18/95	01/18/95
		Carbon Tetrachloride	ND	0.010		
		Chlorobenzene	ND	0.010		
		Chloroform	ND	0.010		
		1,4-Dichlorobenzene	ND	0.010		
		1,2-Dichloroethane	ND	0.010		
		1,1-Dichloroethene	ND	0.010		
		Methyl Ethyl Ketone	ND	0.050		
		Tetrachloroethene	ND	0.010		
		Trichloroethene	ND	0.010		
		Vinyl Chloride	ND	0.025		
95-521-Box-19	P501176-3	Benzene	ND	0.010	01/18/95	01/18/95
		Carbon Tetrachloride	ND	0.010		
		Chlorobenzene	ND	0.010		
		Chloroform	ND	0.010		
		1,4-Dichlorobenzene	ND	0.010		
		1,2-Dichloroethane	ND	0.010		
		1,1-Dichloroethene	ND	0.010		
		Methyl Ethyl Ketone	ND	0.050		
		Tetrachloroethene	ND	0.010		
		Trichloroethene	ND	0.010		
		Vinyl Chloride	ND	0.025		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019270

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TCLP VOC's per EPA 1311, 8240

Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501176
Matrix: soil
Sampled: 01/17/1995
Received: 01/17/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-522-Box-21	P501176-4	Benzene	ND	0.010	01/18/95	01/18/95
		Carbon Tetrachloride	ND	0.010		
		Chlorobenzene	ND	0.010		
		Chloroform	ND	0.010		
		1,4-Dichlorobenzene	ND	0.010		
		1,2-Dichloroethane	ND	0.010		
		1,1-Dichloroethene	ND	0.010		
		Methyl Ethyl Ketone	ND	0.050		
		Tetrachloroethene	ND	0.010		
		Trichloroethene	ND	0.010		
		Vinyl Chloride	ND	0.025		
Method Blank		Benzene	ND	0.0020		
		Carbon Tetrachloride	ND	0.0020		
		Chlorobenzene	ND	0.0020		
		Chloroform	ND	0.0020		
		1,4-Dichlorobenzene	ND	0.0020		
		1,2-Dichloroethane	ND	0.0020		
		1,1-Dichloroethene	ND	0.0020		
		Methyl Ethyl Ketone	ND	0.010		
		Tetrachloroethene	ND	0.0020		
		Trichloroethene	ND	0.0020		
		Vinyl Chloride	ND	0.0050		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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SURROGATE RECOVERIES (%)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P501176
Received: 01/17/1995

Sample Name	Analyte	Result	Control Limits
TPH-D per Oregon DEQ			
95-519-Box-6	1-Chlorooctadecane	– *[1]	50-150
95-520-Box-16	1-Chlorooctadecane	104	50-150
95-521-Box-19	1-Chlorooctadecane	114	50-150
95-522-Box-21	1-Chlorooctadecane	102	50-150
TCLP VOC's per EPA 1311, 8240			
95-519-Box-6	4-Bromofluorobenzene	102	74-121
	1,2-Dichloroethane-d4	100	70-121
	Toluene-d8	101	81-117
95-520-Box-16	4-Bromofluorobenzene	90	74-121
	1,2-Dichloroethane-d4	101	70-121
	Toluene-d8	94	81-117
95-521-Box-19	4-Bromofluorobenzene	89	74-121
	1,2-Dichloroethane-d4	101	70-121
	Toluene-d8	94	81-117
95-522-Box-21	4-Bromofluorobenzene	95	74-121
	1,2-Dichloroethane-d4	101	70-121
	Toluene-d8	98	81-117

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019272

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COMMENTS

Client:	Wacker Siltronic Corporation	NCA Number:	P501176
Project:	FAB-2	**Received:**	01/17/1995

1. Unable to calculate surrogate recovery due to matrix interference.

SCOEPA00019273

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January 20, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

Re: Requested Quality Control Data

Enclosed is the in-house quality control data you requested on NCA project number P501176.

Note: Method blank results and Surrogate Recoveries are included in the final report.

QUALITY CONTROL DEFINITIONS

METHOD BLANK RESULTS

A Method Blank is a laboratory-generated sample which assesses the degree to which laboratory operations and procedures cause false-positive analytical results for your sample.

No target parameters were detected in the method blank associated with your sample at the reporting limit levels noted on the data sheets in the final report.

SURROGATE STANDARD

A surrogate standard (i.e., a chemical compound not expected to occur in an environmental sample) is added to each sample, blank, and matrix spike sample just prior to extraction or processing. The recovery of the surrogate standard is used to monitor for unusual matrix effects, gross sample processing errors, etc. Surrogate recovery is evaluated for acceptance by determining whether the measured concentration falls within accepted limits.

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Accuracy is measured by percent recovery as in:

$$\% \text{ Recovery} = \frac{\text{(Measured Concentration)}}{\text{(Actual Concentration)}} \times 100$$

Precision is measured using duplicate tests by relative percent difference.

$$\text{RPD} = \frac{\text{(Result of Test 1 - Result of Test 2)}}{\text{(Result of Test 1 + Result of Test 2)/2}} \times 100$$

If you should have any questions concerning this report, please contact me.

Sincerely,

Howard Holmes
Project Manager

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BATCH QUALITY CONTROL RESULTS
TPH-D per Oregon DEQ

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P501176
Received: 01/17/1995

METHOD BLANK
Batch # FC95001a
Results In mg/kg (ppm)

Compound	Result	MRL
Diesel/related	ND	25
Date Prepared	01/17/1995	
Date Analyzed	01/17/1995	

Surrogate Recovery (%)	Result	Control Limit
1-Chlorooctadecane	90	50-150

DUPLICATE
Batch # FC95001a
Results In mg/kg (ppm)
Duplicate ID P501176-4

Compound	Sample Conc	Dup Conc	RPD	QC Limit RPD
Diesel/related	790	790	0	50

LABORATORY CONTROL SAMPLE
Batch # FC95001a
Results In mg/kg (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Diesel/related	120	120	100	50-150

SCOEPA00019276

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501176
Received: 01/17/1995

METHOD BLANK
Batch # VS95002c
Results In mg/kg (ppm)

Compound	Result	MRL
Benzene	ND	0.0020
Carbon Tetrachloride	ND	0.0020
Chlorobenzene	ND	0.0020
Chloroform	ND	0.0020
1,4-Dichlorobenzene	ND	0.0020
1,2-Dichloroethane	ND	0.0020
1,1-Dichloroethene	ND	0.0020
Methyl Ethyl Ketone	ND	0.010
Tetrachloroethene	ND	0.0020
Trichloroethene	ND	0.0020
Vinyl Chloride	ND	0.0050
Date Prepared	01/18/1995	
Date Analyzed	01/18/1995	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	100	74-121
1,2-Dichloroethane-d4	103	70-121
Toluene-d8	100	81-117

SCOEPA00019277

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 1311, 8240

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501176
Received: 01/17/1995

METHOD BLANK
Batch # VZ95001d
Results In mg/L (ppm)

Compound	Result	MRL
Benzene	ND	0.0020
Carbon Tetrachloride	ND	0.0020
Chlorobenzene	ND	0.0020
Chloroform	ND	0.0020
1,4-Dichlorobenzene	ND	0.0020
1,2-Dichloroethane	ND	0.0020
1,1-Dichloroethene	ND	0.0020
Methyl Ethyl Ketone	ND	0.010
Tetrachloroethene	ND	0.0020
Trichloroethene	ND	0.0020
Vinyl Chloride	ND	0.0050
Date Extracted	01/18/1995	
Date Prepared	01/19/1995	
Date Analyzed	01/19/1995	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	98	74-121
1,2-Dichloroethane-d4	102	70-121
Toluene-d8	99	81-117

SCOEPA00019278

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501176
Received: 01/17/1995

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # VS95002a **Spike ID P501093-1**
Results In mg/kg (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS %Rec
Benzene	0.020	ND	0.0208	104
Chlorobenzene	0.020	ND	0.0208	104
1,1-Dichloroethene	0.020	ND	0.0197	99
Toluene	0.020	0.0007	0.0214	104
Trichloroethene	0.020	ND	0.0203	102

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
Benzene	0.020	0.0206	103	0.97	21	66-142
Chlorobenzene	0.020	0.0203	102	1.9	21	60-133
1,1-Dichloroethene	0.020	0.0195	98	1.0	22	59-172
Toluene	0.020	0.0210	102	1.9	21	59-139
Trichloroethene	0.020	0.0199	100	2.0	24	62-137

SCOEPA00019279

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 1311, 8240

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501176
Received: 01/17/1995

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # VZ95001a **Spike ID 94-4057-5a**
Results In mg/L (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS %Rec
Benzene	0.020	ND	0.0206	103
Chlorobenzene	0.020	ND	0.0206	103
1,1-Dichloroethene	0.020	ND	0.0188	94
Toluene	0.020	0.0382	0.0588	103
Trichloroethene	0.020	ND	0.0202	101

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
Benzene	0.020	0.0210	105	1.9	21	66-142
Chlorobenzene	0.020	0.0213	107	3.8	21	60-133
1,1-Dichloroethene	0.020	0.0194	97	3.1	22	59-172
Toluene	0.020	0.0590	104	0.97	21	59-139
Trichloroethene	0.020	0.0199	100	0.9950	24	62-137

SCOEPA00019280

NORTH CREEK ANALYTICAL

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15055 S.W. Sequoia Parkway, Suite 110, Portland, OR 97224-7155 (503) 624-9800 FAX 684-3782

CHAIN OF CUSTODY REPORT

CLIENT: Wacker Siltronic
ADDRESS: 7200 N.W. Front Ave Portland, OR
PHONE: 243-2020 x-374 FAX: 241-7599

REPORT TO: Dianne E Mullen
BILLING TO:
P.O. NUMBER: 31002
NCA QUOTE #:

SAME DAY RUSH	(+150%)	
NEXT BUSINESS DAY RUSH	(+100%)	
2 BUSINESS DAY RUSH	(+80%)	X
3 BUSINESS DAY RUSH	(+60%)	
5 BUSINESS DAY RUSH	(+40%)	
10 BUSINESS DAY STANDARD	(LIST PRICE)	
5 BUS. DAY HYDROCARBONS	(LIST PRICE)	

PROJECT NAME: FAB-2
PROJECT NUMBER: Box-6, 16, 19, 21
SAMPLED BY: Odom Phila Vanh Dianne Mullen

Analysis Request: TCLP 8240 / TPH-D

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	TCLP 8240	TPH-D	COMMENTS & PRESERVATIVES USED	NORTH CREEK SAMPLE NUMBER
1. 95-519 - Box-6	1-17-95/1350	S	2	X	X	all samples	P5011761
2. 95-520 - Box-16	1-17-95/1350	S	2	X	X	field on ice	-2
3. 95-521 - Box-19	1-17-95/1350	S	2	X	X		-3
4. 95-522 - Box-21	1-17-95/1350	S	2	X	X		-4
5.							
6.							
8.							
9.							
10.							

RELINQUISHED BY: Dianne Mullen	DATE: 1/17/95	RECEIVED BY: S. Pedersen	DATE: 1/17/95
FIRM: Wacker Siltronic	TIME: 1605	FIRM: NCA	TIME: 1605
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
FIRM:	TIME:	FIRM:	TIME:

ADDITIONAL REMARKS:

PAGE OF

SCOEPA00019281

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January 23, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

RE: JOB # BOX-18
P.O.# 31002
PROJECT - FAB-2

Enclosed are test results for your samples received in this lab on Jan. 18, 1995. For your reference, these analyses have been assigned our NCA # P501179.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

Please call if you have any questions.

Respectfully,

Howard Holmes
Project Manager

NORTH CREEK ANALYTICAL

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TPH-D per Oregon DEQ
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501179
Matrix: soil
Sampled: 01/18/1995
Received: 01/18/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-523 Box-18	P501179-1	Diesel/related	1,200	130	01/18/95	01/19/95
Method Blank		Diesel/related	ND	25		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019283

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TCLP VOC's per EPA 8240
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501179
Matrix: soil
Sampled: 01/18/1995
Received: 01/18/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-523 Box-18	P501179-1	Benzene	ND	0.010	01/18/95	01/18/95
		Carbon Tetrachloride	ND	0.010		
		Chlorobenzene	ND	0.010		
		Chloroform	ND	0.010		
		1,4-Dichlorobenzene	ND	0.010		
		1,2-Dichloroethane	ND	0.010		
		1,1-Dichloroethene	ND	0.010		
		Methyl Ethyl Ketone	ND	0.050		
		Tetrachloroethene	ND	0.010		
		Trichloroethene	ND	0.010		
		Vinyl Chloride	ND	0.025		
Method Blank		Benzene	ND	0.0020		
		Carbon Tetrachloride	ND	0.0020		
		Chlorobenzene	ND	0.0020		
		Chloroform	ND	0.0020		
		1,4-Dichlorobenzene	ND	0.0020		
		1,2-Dichloroethane	ND	0.0020		
		1,1-Dichloroethene	ND	0.0020		
		Methyl Ethyl Ketone	ND	0.010		
		Tetrachloroethene	ND	0.0020		
		Trichloroethene	ND	0.0020		
		Vinyl Chloride	ND	0.0050		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019284

NORTH CREEK ANALYTICAL

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SURROGATE RECOVERIES (%)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P501179
Received: 01/18/1995

Sample Name	Analyte	Result	Control Limits
TPH-D per Oregon DEQ			
95-523 Box-18	1-Chlorooctadecane	-- *[1]	50-150
TCLP VOC's per EPA 1311, 8240			
95-523 Box-18	4-Bromofluorobenzene	81	74-121
	1,2-Dichloroethane-d4	98	70-121
	Toluene-d8	91	81-117

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019285

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COMMENTS

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P501179
Received: 01/18/1995

1. Unable to calculate surrogate recovery due to matrix interference.

SCOEPA00019286

NORTH CREEK ANALYTICAL

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January 23, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

Re: Requested Quality Control Data

Enclosed is the in-house quality control data you requested on NCA project number P501179.

Note: Method blank results and Surrogate Recoveries are included in the final report.

QUALITY CONTROL DEFINITIONS

METHOD BLANK RESULTS

A Method Blank is a laboratory-generated sample which assesses the degree to which laboratory operations and procedures cause false-positive analytical results for your sample.

No target parameters were detected in the method blank associated with your sample at the reporting limit levels noted on the data sheets in the final report.

SURROGATE STANDARD

A surrogate standard (i.e., a chemical compound not expected to occur in an environmental sample) is added to each sample, blank, and matrix spike sample just prior to extraction or processing. The recovery of the surrogate standard is used to monitor for unusual matrix effects, gross sample processing errors, etc. Surrogate recovery is evaluated for acceptance by determining whether the measured concentration falls within accepted limits.

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Accuracy is measured by percent recovery as in:

$$\% \text{ Recovery} = \frac{\text{(Measured Concentration)}}{\text{(Actual Concentration)}} \times 100$$

Precision is measured using duplicate tests by relative percent difference.

$$\text{RPD} = \frac{\text{(Result of Test 1 - Result of Test 2)}}{\text{(Result of Test 1 + Result of Test 2)/2}} \times 100$$

If you should have any questions concerning this report, please contact me.

Sincerely,

Howard Holmes
Project Manager

NORTH CREEK ANALYTICAL
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BATCH QUALITY CONTROL RESULTS
TPH-D per Oregon DEQ

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P501179
Received: 01/18/1995

METHOD BLANK
Batch # FC95001b
Results In mg/kg (ppm)

Compound	Result	MRL
Diesel/related	ND	25
Date Prepared	01/18/1995	
Date Analyzed	01/19/1995	

Surrogate Recovery (%)	Result	Control Limit
1-Chlorooctadecane	89	50-150

DUPLICATE
Batch # FC95001b
Results In mg/kg (ppm)
Duplicate ID P501088A-2

Compound	Sample Conc	Dup Conc	RPD	QC Limit RPD
Diesel/related	68	70	2.9	50

LABORATORY CONTROL SAMPLE
Batch # FC95001a
Results In mg/kg (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Diesel/related	120	120	100	50-150

SCOEPA00019289

NORTH CREEK ANALYTICAL

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501179
Received: 01/18/1995

METHOD BLANK
Batch # VS95002c
Results In mg/kg (ppm)

Compound	Result	MRL
Benzene	ND	0.0020
Carbon Tetrachloride	ND	0.0020
Chlorobenzene	ND	0.0020
Chloroform	ND	0.0020
1,4-Dichlorobenzene	ND	0.0020
1,2-Dichloroethane	ND	0.0020
1,1-Dichloroethene	ND	0.0020
Methyl Ethyl Ketone	ND	0.010
Tetrachloroethene	ND	0.0020
Trichloroethene	ND	0.0020
Vinyl Chloride	ND	0.0050
Date Prepared	01/18/1995	
Date Analyzed	01/18/1995	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	100	74-121
1,2-Dichloroethane-d4	103	70-121
Toluene-d8	100	81-117

SCOEPA00019290

NORTH CREEK ANALYTICAL

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501179
Received: 01/18/1995

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # VS95002a **Spike ID P501093-1**
Results In mg/kg (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS %Rec
Benzene	0.020	ND	0.0208	104
Chlorobenzene	0.020	ND	0.0208	104
1,1-Dichloroethene	0.020	ND	0.0197	99
Toluene	0.020	0.0007	0.0214	104
Trichloroethene	0.020	ND	0.0203	102

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
Benzene	0.020	0.0206	103	0.97	21	66-142
Chlorobenzene	0.020	0.0203	102	1.9	21	60-133
1,1-Dichloroethene	0.020	0.0195	98	1.0	22	59-172
Toluene	0.020	0.0210	102	1.9	21	59-139
Trichloroethene	0.020	0.0199	100	2.0	24	62-137

SCOEPA00019291

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15055 S.W. Sequoia Parkway, Suite 110, Portland, OR 97224-7155 (503) 624-9800 FAX 684-3782

CHAIN OF CUSTODY REPORT

CLIENT: Wacker Siltronic

ADDRESS: 7200 N.W. Front Ave
Portland, OR

PHONE: 243-~~2020~~ 2020 x-374 FAX: 241-7595

REPORT TO: Dianne Mullan

BILLING TO:

P.O. NUMBER: 31002

NCA QUOTE #:

SAME DAY RUSH	(+150%)	
NEXT BUSINESS DAY RUSH	(+100%)	
2 BUSINESS DAY RUSH	(+80%)	X
3 BUSINESS DAY RUSH	(+60%)	
5 BUSINESS DAY RUSH	(+40%)	
10 BUSINESS DAY STANDARD	(LIST PRICE)	
5 BUS. DAY HYDROCARBONS	(LIST PRICE)	

PROJECT NAME: FAB-2

PROJECT NUMBER: BOX-18

SAMPLED BY: Justin Darr, Dianne Mullan

Analysis Request: 8240 (GC/MS), TPH-D

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	8240 (GC/MS)	TPH-D	COMMENTS & PRESERVATIVES USED	NORTH CREEK SAMPLE NUMBER
1. 95-523 Box-18	0900/1-18-95	S	2	X	X	samples held on ice	P501179-1
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							

RELINQUISHED BY: Dianne Mullan	DATE: 1-18-95	RECEIVED BY: E Schmeltzer	DATE: 1-18-95
FIRM: Wacker Siltronic	TIME: 1030	FIRM: NCA	TIME: 1030
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
FIRM:	TIME:	FIRM:	TIME:

ADDITIONAL REMARKS:

PAGE OF

SCOEPA00019292

SAMPLES SENT TO OUTSIDE LABORATORY

FAB-2

1. WSC#: 95- 521

2. Date/Time of Sample: 1-17-95 / 1350

3. Name of Sampler: Olom Philavanhn Dianne Mullan

4. Sample Discription: Drop Box 19 ID#

Other

5. Sent To: ✓ North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

6. Analyses Required: TCLP-8240 TPH-D

7. Chain of Custody Submitted; Yes No

8. Purchase Order Number: 31002

9. Final Results Received On:

10. Additional Notes;

TJR 15 Nov 91
TJR 01 Nov 91
DEM 05 Jan 95

NORTH CREEK ANALYTICAL

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January 20, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

RE: JOB # Box-6, 16, 19, 21
P.O.# 31002
PROJECT - FAB-2

Enclosed are test results for your samples received in this lab on Jan. 17, 1995. For your reference, these analyses have been assigned our NCA # P501176.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

Please call if you have any questions.

Respectfully,

Howard Holmes
Project Manager

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TPH-D per Oregon DEQ
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501176
Matrix: soil
Sampled: 01/17/1995
Received: 01/17/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-519-Box-6	P501176-1	Diesel/related	25,000	1000	01/17/95	01/18/95
95-520-Box-16	P501176-2	Diesel/related	1,500	250	01/17/95	01/18/95
95-521-Box-19	P501176-3	Diesel/related	3,900	250	01/17/95	01/19/95
95-522-Box-21	P501176-4	Diesel/related	790	130	01/17/95	01/18/95
Method Blank		Diesel/related	ND	25		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019295

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TCLP VOC's per EPA 1311, 8240
Results In mg/L (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501176
Matrix: soil
Sampled: 01/17/1995
Received: 01/17/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-519-Box-6	P501176-1	Benzene	0.92	0.020	01/19/95	01/19/95
		Carbon Tetrachloride	ND	0.020		
		Chlorobenzene	ND	0.020		
		Chloroform	ND	0.020		
		1,4-Dichlorobenzene	ND	0.020		
		1,2-Dichloroethane	ND	0.020		
		1,1-Dichloroethene	ND	0.020		
		Methyl Ethyl Ketone	ND	0.10		
		Tetrachloroethene	ND	0.020		
		Trichloroethene	ND	0.020		
		Vinyl Chloride	ND	0.050		
95-520-Box-16	P501176-2	Benzene	0.019	0.010	01/18/95	01/18/95
		Carbon Tetrachloride	ND	0.010		
		Chlorobenzene	ND	0.010		
		Chloroform	ND	0.010		
		1,4-Dichlorobenzene	ND	0.010		
		1,2-Dichloroethane	ND	0.010		
		1,1-Dichloroethene	ND	0.010		
		Methyl Ethyl Ketone	ND	0.050		
		Tetrachloroethene	ND	0.010		
		Trichloroethene	ND	0.010		
		Vinyl Chloride	ND	0.025		
95-521-Box-19	P501176-3	Benzene	ND	0.010	01/18/95	01/18/95
		Carbon Tetrachloride	ND	0.010		
		Chlorobenzene	ND	0.010		
		Chloroform	ND	0.010		
		1,4-Dichlorobenzene	ND	0.010		
		1,2-Dichloroethane	ND	0.010		
		1,1-Dichloroethene	ND	0.010		
		Methyl Ethyl Ketone	ND	0.050		
		Tetrachloroethene	ND	0.010		
		Trichloroethene	ND	0.010		
		Vinyl Chloride	ND	0.025		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019296

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TCLP VOC's per EPA 1311, 8240
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501176
Matrix: soil
Sampled: 01/17/1995
Received: 01/17/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-522-Box-21	P501176-4	Benzene	ND	0.010	01/18/95	01/18/95
		Carbon Tetrachloride	ND	0.010		
		Chlorobenzene	ND	0.010		
		Chloroform	ND	0.010		
		1,4-Dichlorobenzene	ND	0.010		
		1,2-Dichloroethane	ND	0.010		
		1,1-Dichloroethene	ND	0.010		
		Methyl Ethyl Ketone	ND	0.050		
		Tetrachloroethene	ND	0.010		
		Trichloroethene	ND	0.010		
		Vinyl Chloride	ND	0.025		
Method Blank		Benzene	ND	0.0020		
		Carbon Tetrachloride	ND	0.0020		
		Chlorobenzene	ND	0.0020		
		Chloroform	ND	0.0020		
		1,4-Dichlorobenzene	ND	0.0020		
		1,2-Dichloroethane	ND	0.0020		
		1,1-Dichloroethene	ND	0.0020		
		Methyl Ethyl Ketone	ND	0.010		
		Tetrachloroethene	ND	0.0020		
		Trichloroethene	ND	0.0020		
		Vinyl Chloride	ND	0.0050		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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SURROGATE RECOVERIES (%)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P501176
Received: 01/17/1995

Sample Name	Analyte	Result	Control Limits
TPH-D per Oregon DEQ			
95-519-Box-6	1-Chlorooctadecane	– *[1]	50-150
95-520-Box-16	1-Chlorooctadecane	104	50-150
95-521-Box-19	1-Chlorooctadecane	114	50-150
95-522-Box-21	1-Chlorooctadecane	102	50-150
TCLP VOC's per EPA 1311, 8240			
95-519-Box-6	4-Bromofluorobenzene	102	74-121
	1,2-Dichloroethane-d4	100	70-121
	Toluene-d8	101	81-117
95-520-Box-16	4-Bromofluorobenzene	90	74-121
	1,2-Dichloroethane-d4	101	70-121
	Toluene-d8	94	81-117
95-521-Box-19	4-Bromofluorobenzene	89	74-121
	1,2-Dichloroethane-d4	101	70-121
	Toluene-d8	94	81-117
95-522-Box-21	4-Bromofluorobenzene	95	74-121
	1,2-Dichloroethane-d4	101	70-121
	Toluene-d8	98	81-117

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019298

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COMMENTS

Client:	Wacker Siltronic Corporation	NCA Number:	P501176
Project:	FAB-2	**Received:**	01/17/1995

1. Unable to calculate surrogate recovery due to matrix interference.

SCOEPA00019299

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January 20, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

Re: Requested Quality Control Data

Enclosed is the in-house quality control data you requested on NCA project number P501176.

Note: Method blank results and Surrogate Recoveries are included in the final report.

QUALITY CONTROL DEFINITIONS

METHOD BLANK RESULTS

A Method Blank is a laboratory-generated sample which assesses the degree to which laboratory operations and procedures cause false-positive analytical results for your sample.

No target parameters were detected in the method blank associated with your sample at the reporting limit levels noted on the data sheets in the final report.

SURROGATE STANDARD

A surrogate standard (i.e., a chemical compound not expected to occur in an environmental sample) is added to each sample, blank, and matrix spike sample just prior to extraction or processing. The recovery of the surrogate standard is used to monitor for unusual matrix effects, gross sample processing errors, etc. Surrogate recovery is evaluated for acceptance by determining whether the measured concentration falls within accepted limits.

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Accuracy is measured by percent recovery as in:

$$\% \text{ Recovery} = \frac{\text{(Measured Concentration)}}{\text{(Actual Concentration)}} \times 100$$

Precision is measured using duplicate tests by relative percent difference.

$$\text{RPD} = \frac{\text{(Result of Test 1 - Result of Test 2)}}{\text{(Result of Test 1 + Result of Test 2)/2}} \times 100$$

If you should have any questions concerning this report, please contact me.

Sincerely,

Howard Holmes
Project Manager

NORTH CREEK ANALYTICAL

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BATCH QUALITY CONTROL RESULTS
TPH-D per Oregon DEQ

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501176
Received: 01/17/1995

METHOD BLANK
Batch # FC95001a
Results In mg/kg (ppm)

Compound	Result	MRL
Diesel/related	ND	25
Date Prepared	01/17/1995	
Date Analyzed	01/17/1995	

Surrogate Recovery (%)	Result	Control Limit
1-Chlorooctadecane	90	50-150

DUPLICATE
Batch # FC95001a
Results In mg/kg (ppm)

Duplicate ID P501176-4

Compound	Sample Conc	Dup Conc	RPD	QC Limit RPD
Diesel/related	790	790	0	50

LABORATORY CONTROL SAMPLE
Batch # FC95001a
Results In mg/kg (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Diesel/related	120	120	100	50-150

SCOEPA00019302

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501176
Received: 01/17/1995

METHOD BLANK
Batch # VS95002c
Results In mg/kg (ppm)

Compound	Result	MRL
Benzene	ND	0.0020
Carbon Tetrachloride	ND	0.0020
Chlorobenzene	ND	0.0020
Chloroform	ND	0.0020
1,4-Dichlorobenzene	ND	0.0020
1,2-Dichloroethane	ND	0.0020
1,1-Dichloroethene	ND	0.0020
Methyl Ethyl Ketone	ND	0.010
Tetrachloroethene	ND	0.0020
Trichloroethene	ND	0.0020
Vinyl Chloride	ND	0.0050
Date Prepared	01/18/1995	
Date Analyzed	01/18/1995	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	100	74-121
1,2-Dichloroethane-d4	103	70-121
Toluene-d8	100	81-117

SCOEPA00019303

NORTH CREEK ANALYTICAL

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 1311, 8240

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501176
Received: 01/17/1995

METHOD BLANK
Batch # VZ95001d
Results In mg/L (ppm)

Compound	Result	MRL
Benzene	ND	0.0020
Carbon Tetrachloride	ND	0.0020
Chlorobenzene	ND	0.0020
Chloroform	ND	0.0020
1,4-Dichlorobenzene	ND	0.0020
1,2-Dichloroethane	ND	0.0020
1,1-Dichloroethene	ND	0.0020
Methyl Ethyl Ketone	ND	0.010
Tetrachloroethene	ND	0.0020
Trichloroethene	ND	0.0020
Vinyl Chloride	ND	0.0050
Date Extracted	01/18/1995	
Date Prepared	01/19/1995	
Date Analyzed	01/19/1995	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	98	74-121
1,2-Dichloroethane-d4	102	70-121
Toluene-d8	99	81-117

SCOEPA00019304

NORTH CREEK ANALYTICAL
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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P501176
Received: 01/17/1995

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # VS95002a **Spike ID P501093-1**
Results In mg/kg (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS %Rec
Benzene	0.020	ND	0.0208	104
Chlorobenzene	0.020	ND	0.0208	104
1,1-Dichloroethene	0.020	ND	0.0197	99
Toluene	0.020	0.0007	0.0214	104
Trichloroethene	0.020	ND	0.0203	102

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
Benzene	0.020	0.0206	103	0.97	21	66-142
Chlorobenzene	0.020	0.0203	102	1.9	21	60-133
1,1-Dichloroethene	0.020	0.0195	98	1.0	22	59-172
Toluene	0.020	0.0210	102	1.9	21	59-139
Trichloroethene	0.020	0.0199	100	2.0	24	62-137

SCOEPA00019305

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 1311, 8240

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501176
Received: 01/17/1995

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # VZ95001a **Spike ID 94-4057-5a**
Results In mg/L (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS %Rec
Benzene	0.020	ND	0.0206	103
Chlorobenzene	0.020	ND	0.0206	103
1,1-Dichloroethene	0.020	ND	0.0188	94
Toluene	0.020	0.0382	0.0588	103
Trichloroethene	0.020	ND	0.0202	101

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
Benzene	0.020	0.0210	105	1.9	21	66-142
Chlorobenzene	0.020	0.0213	107	3.8	21	60-133
1,1-Dichloroethene	0.020	0.0194	97	3.1	22	59-172
Toluene	0.020	0.0590	104	0.97	21	59-139
Trichloroethene	0.020	0.0199	100	0.9950	24	62-137

SCOEPA00019306

NORTH CREEK ANALYTICAL

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15055 S.W. Sequoia Parkway, Suite 110, Portland, OR 97224-7155 (503) 624-9800 FAX 684-3782

CHAIN OF CUSTODY REPORT

CLIENT: Wacker Siltronic
ADDRESS: 7200 N.W. Front Ave, Portland, OR
PHONE: 243-2020 x-37 FAX: 241-7599

REPORT TO: Dianne E Mullan
BILLING TO:
P.O. NUMBER: 31002
NCA QUOTE #:

SAME DAY RUSH	(+150%)	
NEXT BUSINESS DAY RUSH	(+100%)	
2 BUSINESS DAY RUSH	(+80%)	X
3 BUSINESS DAY RUSH	(+60%)	
5 BUSINESS DAY RUSH	(+40%)	
10 BUSINESS DAY STANDARD	(LIST PRICE)	
5 BUS. DAY HYDROCARBONS	(LIST PRICE)	

PROJECT NAME: FAB-2
PROJECT NUMBER: Box-6, 16, 19, 21
SAMPLED BY: Odom Phila vann Dianne Mullan

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	TCLP 6249	TPH-D	COMMENTS & PRESERVATIVES USED	NORTH CREEK SAMPLE NUMBER
1. 95-519 - Box-6	1-17-95/1350	S	2	X	X	all samples	P5011761
2. 95-520 - Box-16	1-17-95/1350	S	2	X	X	chilled on ice	-2
3. 95-521 - Box-19	1-17-95/1350	S	2	X	X		-3
4. 95-522 - Box-21	1-17-95/1350	S	2	X	X		-4
5.							
6.							
7.							
8.							
9.							
10.							

RELINQUISHED BY: Dianne Mullan	DATE: 1/17/95	RECEIVED BY: S. Pedersen	DATE: 1/17/95
FIRM: Wacker Siltronic	TIME: 1605	FIRM: NCA	TIME: 1605
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
FIRM:	TIME:	FIRM:	TIME:

ADDITIONAL REMARKS:

PAGE OF

NORTH CREEK ANALYTICAL

18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508 (206) 481-9200 FAX 485-2992
East 11115 Montgomery, Suite B, Spokane, WA 98206-4779 (509) 924-9200 FAX 924-9290
15055 S.W. Sequoia Parkway, Suite 110, Portland, OR 97224-7155 (503) 624-9800 FAX 684-3782

CHAIN OF CUSTODY REPORT

CLIENT: Wacker Siltronic
ADDRESS: 7200 N.W. Front Ave, Portland, ORE
PHONE: 243-2020 x-37 FAX: 241-7599

REPORT TO: Dianne E Mullan
BILLING TO:
P.O. NUMBER: 31002
NCA QUOTE #:

SAME DAY RUSH	(+150%)	
NEXT BUSINESS DAY RUSH	(+100%)	
2 BUSINESS DAY RUSH	(+80%)	X
3 BUSINESS DAY RUSH	(+60%)	
5 BUSINESS DAY RUSH	(+40%)	
10 BUSINESS DAY STANDARD	(LIST PRICE)	
5 BUS. DAY HYDROCARBONS	(LIST PRICE)	

PROJECT NAME: FAB-2
PROJECT NUMBER: Box-6, 16, 19, 21
SAMPLED BY: Odom Phila Vank Dianne Mullan

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	TCLP 8240	TPH-D	COMMENTS & PRESERVATIVES USED	NORTH CREEK SAMPLE NUMBER
1. 95-519 - Box-6	1-17-95/1350	S	2	X	X	all samples	
2. 95-520 - Box-16	1-17-95/1350	S	2	X	X	field on ice	
3. 95-521 - Box-19	1-17-95/1350	S	2	X	X		
4. 95-522 - Box-21	1-17-95/1350	S	2	X	X		
5.							
6.							
7.							
8.							
9.							
10.							

RELINQUISHED BY: Dianne Mullan	DATE: 1/17/95	RECEIVED BY: H Pedersen	DATE: 1/17/95
FIRM: Wacker Siltronic	TIME: 1605	FIRM: NCA	TIME: 1605
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
FIRM:	TIME:	FIRM:	TIME:

ADDITIONAL REMARKS:

PAGE OF

SCOEPA00019308

NORTH CREEK ANALYTICAL

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East 11115 Montgomery, Suite B • Spokane, WA 99206-4776 (509) 924-9200 • FAX 924-9290
9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

INVOICE FOR ANALYTICAL SERVICES

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Accounts Payable

Project Manager: Dianne Mullan

Project: FAB-2
#BOX-6-16,19,21

Invoice Number: 25010229

Invoice Date: 01/26/95

P.O. #31002

Soil, Received 1/17/95

NCA Sample #: P501176

QTY	ANALYSES PERFORMED	T.A.T.	UNIT PRICE	NET AMOUNT
4	TPH-Diesel	2 Day	112.00	448.00
3	(Short List)	2 Day	351.00	1,053.00
1	(Short)	2 Day	513.00	513.00

COPY

Invoice Total $ 2,014.00

```
*****************************************
*                                       *
* Remit To: North Creek Analytical, Inc. *
*           18939 - 120th Ave. NE  #101 *
*           Bothell, WA      98011-9508 *
*                                       *
*****************************************
```

TERMS: NET 30 DAYS
PAST DUE INVOICES ARE SUBJECT TO A 1.5% PER MONTH SERVICE CHARGE

SAMPLES SENT TO OUTSIDE LABORATORY
FAB-2

1. WSC#: 95-516

2. Date/Time of Sample: 1-12-94 / 1530

3. Name of Sampler: Gary Kent, Diantos Mullen

4. Sample Discription: Drop Box 20 ID# 910210

Other _____

5. Sent To: X North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

6. Analyses Required: TCLP 8240 TPH-D

7. Chain of Custody Submitted; Yes No

8. Purchase Order Number: ~~32001~~ 31002

9. Final Results Received On: —

10. Additional Notes; _____

TJR 15 Nov 91
TJR 01 Nov 91
DEM 05 Jan 95

NORTH CREEK ANALYTICAL

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RECEIVED JAN 19 1995

January 16, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

RE: JOB # BOX-20
P.O.# 31002
PROJECT - FAB-2

Enclosed are test results for your samples received in this lab on Jan. 12, 1995. For your reference, these analyses have been assigned our NCA # P501140.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

Please call if you have any questions.

Respectfully,

Howard Holmes
Project Manager

NORTH CREEK ANALYTICAL

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

TPH-D per Oregon DEQ
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501140
Matrix: soil
Sampled: 01/12/1995
Received: 01/12/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-516-Box 20	P501140-1	Diesel/related	1,200	630	01/12/95	01/12/95
Method Blank		Diesel/related	ND	25		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019312

NORTH CREEK ANALYTICAL
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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

TCLP VOC's per EPA 8240
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501140
Matrix: soil
Sampled: 01/12/1995
Received: 01/12/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-516-Box 20	P501140-1	Benzene	ND	0.010	01/13/95	01/13/95
		Carbon Tetrachloride	ND	0.010		
		Chlorobenzene	ND	0.010		
		Chloroform	ND	0.010		
		1,4-Dichlorobenzene	ND	0.010		
		1,2-Dichloroethane	ND	0.010		
		1,1-Dichloroethene	ND	0.010		
		Methyl Ethyl Ketone	ND	0.13		
		Tetrachloroethene	ND	0.010		
		Trichloroethene	ND	0.010		
		Vinyl Chloride	ND	0.025		
Method Blank		Benzene	ND	0.0020		
		Carbon Tetrachloride	ND	0.0020		
		Chlorobenzene	ND	0.0020		
		Chloroform	ND	0.0020		
		1,4-Dichlorobenzene	ND	0.0020		
		1,2-Dichloroethane	ND	0.0020		
		1,1-Dichloroethene	ND	0.0020		
		Methyl Ethyl Ketone	ND	0.0075		
		Tetrachloroethene	ND	0.0020		
		Trichloroethene	ND	0.0020		
		Vinyl Chloride	ND	0.0050		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019313

NORTH CREEK ANALYTICAL

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

SURROGATE RECOVERIES (%)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P501140
Received: 01/12/1995

Sample Name	Analyte	Result	Control Limits
TPH-D per Oregon DEQ			
95-516-Box 20	1-Chlorooctadecane	– *[1]	50-150
TCLP VOC's per EPA 1311, 8240			
95-516-Box 20	4-Bromofluorobenzene	82	74-121
	1,2-Dichloroethane-d4	81	70-121
	Toluene-d8	87	81-117

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019314

NORTH CREEK ANALYTICAL

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

COMMENTS

Client:	Wacker Siltronic Corporation	NCA Number:	P501140
Project:	FAB-2	**Received:**	01/12/1995

1. Unable to calculate surrogate recovery due to matrix interference.

SCOEPA00019315

NORTH CREEK ANALYTICAL

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

RECEIVED JAN 1 9 1995
Dm

January 16, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

Re: Requested Quality Control Data

Enclosed is the in-house quality control data you requested on NCA project number P501140. - Box-20 WSC # 95-516

Note: Method blank results and Surrogate Recoveries are included in the final report.

QUALITY CONTROL DEFINITIONS

METHOD BLANK RESULTS

A Method Blank is a laboratory-generated sample which assesses the degree to which laboratory operations and procedures cause false-positive analytical results for your sample.

No target parameters were detected in the method blank associated with your sample at the reporting limit levels noted on the data sheets in the final report.

SURROGATE STANDARD

A surrogate standard (i.e., a chemical compound not expected to occur in an environmental sample) is added to each sample, blank, and matrix spike sample just prior to extraction or processing. The recovery of the surrogate standard is used to monitor for unusual matrix effects, gross sample processing errors, etc. Surrogate recovery is evaluated for acceptance by determining whether the measured concentration falls within accepted limits.

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

Accuracy is measured by percent recovery as in:

$$\% \text{ Recovery} = \frac{\text{(Measured Concentration)}}{\text{(Actual Concentration)}} \times 100$$

Precision is measured using duplicate tests by relative percent difference.

$$\text{RPD} = \frac{\text{(Result of Test 1 - Result of Test 2)}}{\text{(Result of Test 1 + Result of Test 2)/2}} \times 100$$

If you should have any questions concerning this report, please contact me.

Sincerely,

Howard Holmes
Project Manager

NORTH CREEK ANALYTICAL

18939 120th Avenue N.E., Suite 101 • Bothell, WA 98011-9508 (206) 481-9200 • FAX 485-2992
East 11115 Montgomery, Suite B • Spokane, WA 99206-4776 (509) 924-9200 • FAX 924-9290
9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

BATCH QUALITY CONTROL RESULTS
TPH-D per Oregon DEQ

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501140
Received: 01/12/1995

METHOD BLANK
Batch # FC94044h
Results In mg/kg (ppm)

Compound	Result	MRL
Diesel/related	ND	25
Date Prepared	01/12/1995	
Date Analyzed	01/12/1995	

Surrogate Recovery (%)	Result	Control Limit
1-Chlorooctadecane	81	50-150

DUPLICATE
Batch # FC94044g
Results In mg/kg (ppm)

Compound	Sample Conc	Dup Conc	RPD	QC Limit RPD
Diesel/related	710	730	2.8	50

LABORATORY CONTROL SAMPLE
Batch # FC94044a
Results In mg/kg (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Diesel/related	120	140	117	50-150

SCOEPA00019318

NORTH CREEK ANALYTICAL

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East 11115 Montgomery, Suite B • Spokane, WA 99206-4776 (509) 924-9200 • FAX 924-9290
9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501140
Received: 01/12/1995

METHOD BLANK
Batch # VS95002a
Results In mg/kg (ppm)

Compound	Result	MRL
Benzene	ND	0.0020
Carbon Tetrachloride	ND	0.0020
Chlorobenzene	ND	0.0020
Chloroform	ND	0.0020
1,4-Dichlorobenzene	ND	0.0020
1,2-Dichloroethane	ND	0.0020
1,1-Dichloroethene	ND	0.0020
Methyl Ethyl Ketone	ND	0.0075
Tetrachloroethene	ND	0.0020
Trichloroethene	ND	0.0020
Vinyl Chloride	ND	0.0050
Date Prepared	01/13/1995	
Date Analyzed	01/13/1995	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	96	74-121
1,2-Dichloroethane-d4	83	70-121
Toluene-d8	99	81-117

SCOEPA00019319

NORTH CREEK ANALYTICAL
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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P501140
Received: 01/12/1995

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # VS95002a **Spike ID P501093-1**
Results In mg/kg (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS %Rec
Benzene	0.020	ND	0.0208	104
Chlorobenzene	0.020	ND	0.0208	104
1,1-Dichloroethene	0.020	ND	0.0197	99
Toluene	0.020	0.0007	0.0214	104
Trichloroethene	0.020	ND	0.0203	102

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
Benzene	0.020	0.0206	103	0.97	21	66-142
Chlorobenzene	0.020	0.0203	102	1.9	21	60-133
1,1-Dichloroethene	0.020	0.0195	98	1.0	22	59-172
Toluene	0.020	0.0210	102	1.9	21	59-139
Trichloroethene	0.020	0.0199	100	2.0	24	62-137

SCOEPA00019320

NORTH CREEK ANALYTICAL

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15055 S.W. Sequoia Parkway, Suite 110, Portland, OR 97224-7155 (503) 624-9800 FAX 684-3782

CHAIN OF CUSTODY REPORT

CLIENT: Wacker Siltronic
ADDRESS: 7200 N.W. Front Ave Portland, OR
PHONE: 243-2020 X-374 FAX:

REPORT TO: Dianne Mullen
BILLING TO:
P.O. NUMBER: 31002
NCA QUOTE #:

SAME DAY RUSH	(+150%)	X
NEXT BUSINESS DAY RUSH	(+100%)	
2 BUSINESS DAY RUSH	(+80%)	
3 BUSINESS DAY RUSH	(+60%)	
5 BUSINESS DAY RUSH	(+40%)	
10 BUSINESS DAY STANDARD	(LIST PRICE)	
5 BUS. DAY HYDROCARBONS	(LIST PRICE)	

PROJECT NAME: FAB-2
PROJECT NUMBER: Box - 20
SAMPLED BY: Gary Kent, Dianne Mullen

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	TCLP 8240	TPH-D	COMMENTS & PRESERVATIVES USED	NORTH CREEK SAMPLE NUMBER
1. 95-5N-Box-20	1-12-95/1530	S	2	X	X	kept on ice	P501140-1 1a
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							

RELINQUISHED BY: Dianne E Mullen	DATE: 1/12/95	RECEIVED BY: KK Schneltzer	DATE: 1-12-95
FIRM: Wacker Siltronic	TIME: 1700	FIRM: NCA	TIME: 1055
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
FIRM:	TIME:	FIRM:	TIME:

ADDITIONAL REMARKS:

PAGE OF

NORTH CREEK ANALYTICAL

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East 11115 Montgomery, Suite B • Spokane, WA 99206-4776 (509) 924-9200 • FAX 924-9290
9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

INVOICE FOR ANALYTICAL SERVICES

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Accounts Payable

Project Manager: Dianne Mullan

Project: FAB-2, #BOX-20

Invoice Number: 25010085

Invoice Date: 01/17/95

P.O. #31002

Soil, Received 1/12/95

NCA Sample #: P501140

QTY	ANALYSES PERFORMED	T.A.T.	UNIT PRICE	NET AMOUNT
1	TPH-Diesel	1 Day	136.00	136.00
1	8240 Short List	1 Day	390.00	390.00

Invoice Total $ 526.00

```
*****************************************
*                                       *
* Remit To: North Creek Analytical, Inc. *
*           18939 - 120th Ave. NE  #101 *
*           Bothell, WA      98011-9508 *
*                                       *
*****************************************
```

COPY

TERMS: NET 30 DAYS
PAST DUE INVOICES ARE SUBJECT TO A 1.5% PER MONTH SERVICE CHARGE

SAMPLES SENT TO OUTSIDE LABORATORY

FAB-2

1. WSC#: 95- 522

2. Date/Time of Sample: 1-17-95 / 1350

3. Name of Sampler: Dom Philavanh, Dianne Mullan

4. Sample Discription: Drop Box 21 ID#

Other

5. Sent To: ✓ North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

6. Analyses Required:

7. Chain of Custody Submitted; (Yes) No

8. Purchase Order Number: 31002

9. Final Results Received On:

10. Additional Notes; VOCLP-8240, TPH-D

TJR 15 Nov 91
TJR 01 Nov 91
DEM 05 Jan 95

NORTH CREEK ANALYTICAL

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15055 S.W. Sequoia Parkway, Suite 110, Portland, OR 97224-7155 (503) 624-9800 FAX 684-3782

CHAIN OF CUSTODY REPORT

CLIENT: Wacker Siltronic
ADDRESS: 7200 N.W. Front Ave, Portland, OR
PHONE: 243-2020 x-37 FAX: 241-7599

REPORT TO: Dianne E Muller
BILLING TO:
P.O. NUMBER: 31002
NCA QUOTE #:

SAME DAY RUSH	(+150%)	
NEXT BUSINESS DAY RUSH	(+100%)	
2 BUSINESS DAY RUSH	(+80%)	X
3 BUSINESS DAY RUSH	(+60%)	
5 BUSINESS DAY RUSH	(+40%)	
10 BUSINESS DAY STANDARD	(LIST PRICE)	
5 BUS. DAY HYDROCARBONS	(LIST PRICE)	

PROJECT NAME: FAB-2
PROJECT NUMBER: Box-6, 16, 19, 21
SAMPLED BY: Odom Phila Vanh Dianne Muller

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	TCLP 8240	TPH-D	COMMENTS & PRESERVATIVES USED	NORTH CREEK SAMPLE NUMBER
1. 95-519 - Box-6	1-17-95/1350	S	2	X	X	all samples	
2. 95-520 - Box-16	1-17-95/1350	S	2	X	X	held on ice	
3. 95-521 - Box-19	1-17-95/1350	S	2	X	X		
4. 95-522 - Box-21	1-17-95/1350	S	2	X	X		
5.							
6.							
7.							
8.							
9.							
10.							

RELINQUISHED BY: Dianne Muller	DATE: 1/17/95	RECEIVED BY: S. Pedersen	DATE: 1/17/95
FIRM: Wacker Siltronic	TIME: 1605	FIRM: NCA	TIME: 1605
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
FIRM:	TIME:	FIRM:	TIME:

ADDITIONAL REMARKS:

PAGE OF

SCOEPA00019324

NORTH CREEK ANALYTICAL

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

January 20, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

RE: JOB # Box-6, 16, 19, 21
P.O.# 31002
PROJECT - FAB-2

Enclosed are test results for your samples received in this lab on Jan. 17, 1995. For your reference, these analyses have been assigned our NCA # P501176.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

Please call if you have any questions.

Respectfully,

Howard Holmes
Project Manager

NORTH CREEK ANALYTICAL
18939 120th Avenue N.E., Suite 101 • Bothell, WA 98011-9508 (206) 481-9200 • FAX 485-2992
East 11115 Montgomery, Suite B • Spokane, WA 99206-4776 (509) 924-9200 • FAX 924-9290
9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

TPH-D per Oregon DEQ
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501176
Matrix: soil
Sampled: 01/17/1995
Received: 01/17/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-519-Box-6	P501176-1	Diesel/related	25,000	1000	01/17/95	01/18/95
95-520-Box-16	P501176-2	Diesel/related	1,500	250	01/17/95	01/18/95
95-521-Box-19	P501176-3	Diesel/related	3,900	250	01/17/95	01/19/95
95-522-Box-21	P501176-4	Diesel/related	790	130	01/17/95	01/18/95
Method Blank		Diesel/related	ND	25		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019326

NORTH CREEK ANALYTICAL
18939 120th Avenue N.E., Suite 101 • Bothell, WA 98011-9508 (206) 481-9200 • FAX 485-2992
East 11115 Montgomery, Suite B • Spokane, WA 99206-4776 (509) 924-9200 • FAX 924-9290
9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

TCLP VOC's per EPA 1311, 8240
Results In mg/L (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501176
Matrix: soil
Sampled: 01/17/1995
Received: 01/17/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-519-Box-6	P501176-1	Benzene	0.92	0.020	01/19/95	01/19/95
		Carbon Tetrachloride	ND	0.020		
		Chlorobenzene	ND	0.020		
		Chloroform	ND	0.020		
		1,4-Dichlorobenzene	ND	0.020		
		1,2-Dichloroethane	ND	0.020		
		1,1-Dichloroethene	ND	0.020		
		Methyl Ethyl Ketone	ND	0.10		
		Tetrachloroethene	ND	0.020		
		Trichloroethene	ND	0.020		
		Vinyl Chloride	ND	0.050		
95-520-Box-16	P501176-2	Benzene	0.019	0.010	01/18/95	01/18/95
		Carbon Tetrachloride	ND	0.010		
		Chlorobenzene	ND	0.010		
		Chloroform	ND	0.010		
		1,4-Dichlorobenzene	ND	0.010		
		1,2-Dichloroethane	ND	0.010		
		1,1-Dichloroethene	ND	0.010		
		Methyl Ethyl Ketone	ND	0.050		
		Tetrachloroethene	ND	0.010		
		Trichloroethene	ND	0.010		
		Vinyl Chloride	ND	0.025		
95-521-Box-19	P501176-3	Benzene	ND	0.010	01/18/95	01/18/95
		Carbon Tetrachloride	ND	0.010		
		Chlorobenzene	ND	0.010		
		Chloroform	ND	0.010		
		1,4-Dichlorobenzene	ND	0.010		
		1,2-Dichloroethane	ND	0.010		
		1,1-Dichloroethene	ND	0.010		
		Methyl Ethyl Ketone	ND	0.050		
		Tetrachloroethene	ND	0.010		
		Trichloroethene	ND	0.010		
		Vinyl Chloride	ND	0.025		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019327

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TCLP VOC's per EPA 1311, 8240
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501176
Matrix: soil
Sampled: 01/17/1995
Received: 01/17/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-522-Box-21	P501176-4	Benzene	ND	0.010	01/18/95	01/18/95
		Carbon Tetrachloride	ND	0.010		
		Chlorobenzene	ND	0.010		
		Chloroform	ND	0.010		
		1,4-Dichlorobenzene	ND	0.010		
		1,2-Dichloroethane	ND	0.010		
		1,1-Dichloroethene	ND	0.010		
		Methyl Ethyl Ketone	ND	0.050		
		Tetrachloroethene	ND	0.010		
		Trichloroethene	ND	0.010		
		Vinyl Chloride	ND	0.025		
Method Blank		Benzene	ND	0.0020		
		Carbon Tetrachloride	ND	0.0020		
		Chlorobenzene	ND	0.0020		
		Chloroform	ND	0.0020		
		1,4-Dichlorobenzene	ND	0.0020		
		1,2-Dichloroethane	ND	0.0020		
		1,1-Dichloroethene	ND	0.0020		
		Methyl Ethyl Ketone	ND	0.010		
		Tetrachloroethene	ND	0.0020		
		Trichloroethene	ND	0.0020		
		Vinyl Chloride	ND	0.0050		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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SURROGATE RECOVERIES (%)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P501176
Received: 01/17/1995

Sample Name	Analyte	Result	Control Limits
TPH-D per Oregon DEQ			
95-519-Box-6	1-Chlorooctadecane	– *[1]	50-150
95-520-Box-16	1-Chlorooctadecane	104	50-150
95-521-Box-19	1-Chlorooctadecane	114	50-150
95-522-Box-21	1-Chlorooctadecane	102	50-150
TCLP VOC's per EPA 1311, 8240			
95-519-Box-6	4-Bromofluorobenzene	102	74-121
	1,2-Dichloroethane-d4	100	70-121
	Toluene-d8	101	81-117
95-520-Box-16	4-Bromofluorobenzene	90	74-121
	1,2-Dichloroethane-d4	101	70-121
	Toluene-d8	94	81-117
95-521-Box-19	4-Bromofluorobenzene	89	74-121
	1,2-Dichloroethane-d4	101	70-121
	Toluene-d8	94	81-117
95-522-Box-21	4-Bromofluorobenzene	95	74-121
	1,2-Dichloroethane-d4	101	70-121
	Toluene-d8	98	81-117

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019329

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COMMENTS

Client:	Wacker Siltronic Corporation	NCA Number:	P501176
Project:	FAB-2	**Received:**	01/17/1995

1. Unable to calculate surrogate recovery due to matrix interference.

SCOEPA00019330

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January 20, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

Re: Requested Quality Control Data

Enclosed is the in-house quality control data you requested on NCA project number P501176.

Note: Method blank results and Surrogate Recoveries are included in the final report.

QUALITY CONTROL DEFINITIONS

METHOD BLANK RESULTS

A Method Blank is a laboratory-generated sample which assesses the degree to which laboratory operations and procedures cause false-positive analytical results for your sample.

No target parameters were detected in the method blank associated with your sample at the reporting limit levels noted on the data sheets in the final report.

SURROGATE STANDARD

A surrogate standard (i.e., a chemical compound not expected to occur in an environmental sample) is added to each sample, blank, and matrix spike sample just prior to extraction or processing. The recovery of the surrogate standard is used to monitor for unusual matrix effects, gross sample processing errors, etc. Surrogate recovery is evaluated for acceptance by determining whether the measured concentration falls within accepted limits.

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Accuracy is measured by percent recovery as in:

$$\% \text{ Recovery} = \frac{\text{(Measured Concentration)}}{\text{(Actual Concentration)}} \times 100$$

Precision is measured using duplicate tests by relative percent difference.

$$\text{RPD} = \frac{\text{(Result of Test 1 - Result of Test 2)}}{\text{(Result of Test 1 + Result of Test 2)/2}} \times 100$$

If you should have any questions concerning this report, please contact me.

Sincerely,

Howard Holmes
Project Manager

NORTH CREEK ANALYTICAL

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BATCH QUALITY CONTROL RESULTS
TPH-D per Oregon DEQ

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501176
Received: 01/17/1995

METHOD BLANK
Batch # FC95001a
Results In mg/kg (ppm)

Compound	Result	MRL
Diesel/related	ND	25
Date Prepared	01/17/1995	
Date Analyzed	01/17/1995	

Surrogate Recovery (%)	Result	Control Limit
1-Chlorooctadecane	90	50-150

DUPLICATE
Batch # FC95001a
Results In mg/kg (ppm)

Duplicate ID P501176-4

Compound	Sample Conc	Dup Conc	RPD	QC Limit RPD
Diesel/related	790	790	0	50

LABORATORY CONTROL SAMPLE
Batch # FC95001a
Results In mg/kg (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Diesel/related	120	120	100	50-150

SCOEPA00019333

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501176
Received: 01/17/1995

METHOD BLANK
Batch # VS95002c
Results In mg/kg (ppm)

Compound	Result	MRL
Benzene	ND	0.0020
Carbon Tetrachloride	ND	0.0020
Chlorobenzene	ND	0.0020
Chloroform	ND	0.0020
1,4-Dichlorobenzene	ND	0.0020
1,2-Dichloroethane	ND	0.0020
1,1-Dichloroethene	ND	0.0020
Methyl Ethyl Ketone	ND	0.010
Tetrachloroethene	ND	0.0020
Trichloroethene	ND	0.0020
Vinyl Chloride	ND	0.0050
Date Prepared	01/18/1995	
Date Analyzed	01/18/1995	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	100	74-121
1,2-Dichloroethane-d4	103	70-121
Toluene-d8	100	81-117

SCOEPA00019334

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 1311, 8240

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501176
Received: 01/17/1995

METHOD BLANK
Batch # VZ95001d
Results In mg/L (ppm)

Compound	Result	MRL
Benzene	ND	0.0020
Carbon Tetrachloride	ND	0.0020
Chlorobenzene	ND	0.0020
Chloroform	ND	0.0020
1,4-Dichlorobenzene	ND	0.0020
1,2-Dichloroethane	ND	0.0020
1,1-Dichloroethene	ND	0.0020
Methyl Ethyl Ketone	ND	0.010
Tetrachloroethene	ND	0.0020
Trichloroethene	ND	0.0020
Vinyl Chloride	ND	0.0050
Date Extracted	01/18/1995	
Date Prepared	01/19/1995	
Date Analyzed	01/19/1995	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	98	74-121
1,2-Dichloroethane-d4	102	70-121
Toluene-d8	99	81-117

SCOEPA00019335

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501176
Received: 01/17/1995

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # VS95002a **Spike ID P501093-1**
Results In mg/kg (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS %Rec
Benzene	0.020	ND	0.0208	104
Chlorobenzene	0.020	ND	0.0208	104
1,1-Dichloroethene	0.020	ND	0.0197	99
Toluene	0.020	0.0007	0.0214	104
Trichloroethene	0.020	ND	0.0203	102

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
Benzene	0.020	0.0206	103	0.97	21	66-142
Chlorobenzene	0.020	0.0203	102	1.9	21	60-133
1,1-Dichloroethene	0.020	0.0195	98	1.0	22	59-172
Toluene	0.020	0.0210	102	1.9	21	59-139
Trichloroethene	0.020	0.0199	100	2.0	24	62-137

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 1311, 8240

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501176
Received: 01/17/1995

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # VZ95001a **Spike ID 94-4057-5a**
Results In mg/L (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS %Rec
Benzene	0.020	ND	0.0206	103
Chlorobenzene	0.020	ND	0.0206	103
1,1-Dichloroethene	0.020	ND	0.0188	94
Toluene	0.020	0.0382	0.0588	103
Trichloroethene	0.020	ND	0.0202	101

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
Benzene	0.020	0.0210	105	1.9	21	66-142
Chlorobenzene	0.020	0.0213	107	3.8	21	60-133
1,1-Dichloroethene	0.020	0.0194	97	3.1	22	59-172
Toluene	0.020	0.0590	104	0.97	21	59-139
Trichloroethene	0.020	0.0199	100	0.9950	24	62-137

SCOEPA00019337

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15055 S.W. Sequoia Parkway, Suite 110, Portland, OR 97224-7155 (503) 624-9800 FAX 684-3782

CHAIN OF CUSTODY REPORT

CLIENT: Wacker Siltronic
ADDRESS: 7200 N.W. Front Ave, Portland, OR
PHONE: 243-2020 x-37 FAX: 241-7599

REPORT TO: Dianne E Mullan
BILLING TO:
P.O. NUMBER: 31002
NCA QUOTE #:

SAME DAY RUSH	(+150%)	
NEXT BUSINESS DAY RUSH	(+100%)	
2 BUSINESS DAY RUSH	(+80%)	X
3 BUSINESS DAY RUSH	(+60%)	
5 BUSINESS DAY RUSH	(+40%)	
10 BUSINESS DAY STANDARD	(LIST PRICE)	
5 BUS. DAY HYDROCARBONS	(LIST PRICE)	

PROJECT NAME: FAB-2
PROJECT NUMBER: Box-6, 16, 19, 21
SAMPLED BY: Odom Phila vann Dianne Mullan

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	TCLP 6249	TPH-D	COMMENTS & PRESERVATIVES USED	NORTH CREEK SAMPLE NUMBER
1. 95-519 - Box-6	1-17-95/1350	S	2	X	X	all samples	P5011761
2. 95-520 - Box-16	1-17-95/1350	S	2	X	X	held on ice	-2
3. 95-521 - Box-19	1-17-95/1350	S	2	X	X		-3
4. 95-522 - Box-21	1-17-95/1350	S	2	X	X		-4
5.							
6.							
8.							
9.							
10.							

RELINQUISHED BY: Dianne Mullan	DATE: 1/17/95	RECEIVED BY: S. Pedersen	DATE: 1/17/95
FIRM: Wacker Siltronic	TIME: 1605	FIRM: NCA	TIME: 1605
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
FIRM:	TIME:	FIRM:	TIME:

ADDITIONAL REMARKS:

PAGE OF

SAMPLES SENT TO OUTSIDE LABORATORY
FAB-2

1. WSC#: 95- 528

2. Date/Time of Sample: 1-25-95 / 1130

3. Name of Sampler: Gary Kent, Dennis Mullan

4. Sample Discription: Drop Box 22 ID# 165

Other _____

5. Sent To: X North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

6. Analyses Required: TCLP - 8240 - TPH+D

7. Chain of Custody Submitted; (Yes) No

8. Purchase Order Number: 31002

9. Final Results Received On: _____

10. Additional Notes; _____

TJR 15 Nov 91
TJR 01 Nov 91
DEM 05 Jan 95

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9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202

CHAIN OF CUSTODY REPORT

CLIENT: Wacker Siltronic
ADDRESS: 7200 N.W. Front Ave Portland, OR
PHONE: 243-2020 X-3741 FAX:

REPORT TO: Dianne Mullan
BILLING TO:
P.O. NUMBER: 3R002
NCA QUOTE #:

PROJECT NAME: FAB-2
PROJECT NUMBER: Box's
SAMPLED BY: Gary Kent, Dianne Mullan

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: 10 | 5 | 3 | 2 | X

(Please Select One)

Fuels & Hydrocarbon Analyses: 5 | 3 | 2 | X

* Turnaround Requests less than standard will incur Rush Charges.

FAX RESULTS BY :

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	TCLP 8240	TCLP(8)	TPH-D	TCLP 8150	Flash Point 1010	pH 9040	TPH-G	TCLP 8270	TCLP Pest	COMMENTS & PRESERVATIVES USED	NCA SAMPLE NUMBER
1. 95-526 - Box 5	1-25-95/1050	S	1	X		X								P501258-1
2. 95-527 - Box 6	1115	S	1	X		X								P501259-1
3. 95-528 - Box-22	1130	S	2	X		X								P501260-1
4. 95-529 - Box-24	1145	S	2	X	X	X	X	X	X	X	X	X		P501261-1
5. 95-530 - Box-25	1200	S	2	X		X								P501262-1
6. 95-531 - Box-26	1245	S	2	X		X								P501263-1
7. 95-532 - Box-27	1300	S	2	X		X								P501264-1
8. 95-525 - Box-28	1040	S	2	X		X								P501265-1
9.														
10.														

Analysis Request:

Allied on 1/26

RELINQUISHED BY: Dianne Mullan	DATE: 1-25-95	RECEIVED BY: Sara McClurg	DATE: 1-25-95
PRINT NAME: Dianne Mullan FIRM: Wacker Siltronic	TIME: 1655	PRINT NAME: Sara McClurg FIRM: NCA	TIME: 1655
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
PRINT NAME: FIRM:	TIME:	PRINT NAME: FIRM:	TIME:

ADDITIONAL REMARKS:
additional analyses were added on #95-529-Box-24: TCLP(8) TCLP(8150) Flash Point (1010) pH (9040) TPH-G, TCLP (8270) TCLP (Pest)

PAGE OF

COC Rev 6, 10/94

(1) This sample was not included - sending it out on 1/26/95 DM

SCOEPA00019340

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RECEIVED FEB 6 1995

January 30, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

RE: JOB # BOX'S
P.O.# 31002
PROJECT - FAB-2

Enclosed are test results for your samples received in this lab on Jan. 25, 1995. For your reference, these analyses have been assigned our NCA # P501260.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

Please call if you have any questions.

Respectfully,

Howard Holmes
Project Manager

NORTH CREEK ANALYTICAL

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TPH-D per Oregon DEQ

Results In mg/kg (ppm)

RECEIVED FEB 6 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501260
Matrix: soil
Sampled: 01/25/1995
Received: 01/25/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-528-BOX-22	P501260-1	Diesel/related	3,800	100	01/25/95	01/25/95
Method Blank		Diesel/related	ND	25		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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TCLP VOC's per EPA 8240

Results in mg/kg (ppm)

RECEIVED FEB 6 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501260
Matrix: soil
Sampled: 01/25/1995
Received: 01/25/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-528-BOX-22	P501260-1	Benzene	0.068	0.010	01/26/95	01/26/95
		Carbon Tetrachloride	ND	0.010		
		Chlorobenzene	ND	0.010		
		Chloroform	ND	0.010		
		1,4-Dichlorobenzene	ND	0.010		
		1,2-Dichloroethane	ND	0.010		
		1,1-Dichloroethene	ND	0.010		
		Methyl Ethyl Ketone	ND	0.038		
		Tetrachloroethene	ND	0.010		
		Trichloroethene	ND	0.010		
		Vinyl Chloride	ND	0.025		
Method Blank		Benzene	ND	0.0020		
		Carbon Tetrachloride	ND	0.0020		
		Chlorobenzene	ND	0.0020		
		Chloroform	ND	0.0020		
		1,4-Dichlorobenzene	ND	0.0020		
		1,2-Dichloroethane	ND	0.0020		
		1,1-Dichloroethene	ND	0.0020		
		Methyl Ethyl Ketone	ND	0.0075		
		Tetrachloroethene	ND	0.0020		
		Trichloroethene	ND	0.0020		
		Vinyl Chloride	ND	0.0050		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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SURROGATE RECOVERIES (%)

RECEIVED FEB 6 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P501260
Received: 01/25/1995

Sample Name	Analyte	Result	Control Limits
TPH-D per Oregon DEQ			
95-528-BOX-22	1-Chlorooctadecane	– *[1]	50-150
TCLP VOC's per EPA 1311, 8240			
95-528-BOX-22	4-Bromofluorobenzene	96	74-121
	1,2-Dichloroethane-d4	104	70-121
	Toluene-d8	96	81-117

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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COMMENTS

RECEIVED FEB 6 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P501260
Received: 01/25/1995

1. Unable to calculate surrogate recovery due to matrix interference.

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RECEIVED FEB 6 1995

January 30, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

Re: Requested Quality Control Data

Enclosed is the in-house quality control data you requested on NCA project number P501260.

Note: Method blank results and Surrogate Recoveries are included in the final report.

QUALITY CONTROL DEFINITIONS

METHOD BLANK RESULTS

A Method Blank is a laboratory-generated sample which assesses the degree to which laboratory operations and procedures cause false-positive analytical results for your sample.

No target parameters were detected in the method blank associated with your sample at the reporting limit levels noted on the data sheets in the final report.

SURROGATE STANDARD

A surrogate standard (i.e., a chemical compound not expected to occur in an environmental sample) is added to each sample, blank, and matrix spike sample just prior to extraction or processing. The recovery of the surrogate standard is used to monitor for unusual matrix effects, gross sample processing errors, etc. Surrogate recovery is evaluated for acceptance by determining whether the measured concentration falls within accepted limits.

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Accuracy is measured by percent recovery as in:

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$$\% \text{ Recovery} = \frac{\text{(Measured Concentration)}}{\text{(Actual Concentration)}} \times 100$$

Precision is measured using duplicate tests by relative percent difference.

$$\text{RPD} = \frac{\text{(Result of Test 1 - Result of Test 2)}}{\text{(Result of Test 1 + Result of Test 2)/2}} \times 100$$

If you should have any questions concerning this report, please contact me.

Sincerely,

Howard Holmes
Project Manager

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BATCH QUALITY CONTROL RESULTS
TPH-D per Oregon DEQ

RECEIVED FEB 6 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501260
Received: 01/25/1995

METHOD BLANK
Batch # FC95002b
Results In mg/kg (ppm)

Compound	Result	MRL
Diesel/related	ND	25
Date Prepared	01/25/1995	
Date Analyzed	01/25/1995	

Surrogate Recovery (%)	Result	Control Limit
1-Chlorooctadecane	101	50-150

DUPLICATE
Batch # FC95002b **Duplicate ID P501265-1**
Results In mg/kg (ppm)

Compound	Sample Conc	Dup Conc	RPD	QC Limit RPD
Diesel/related	2,000	2,800	34	50

LABORATORY CONTROL SAMPLE
Batch # FC95002a
Results In mg/kg (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Diesel/related	120	120	100	50-150

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

RECEIVED FEB 6 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501260
Received: 01/25/1995

METHOD BLANK
Batch # VS95004b
Results In mg/kg (ppm)

Compound	Result	MRL
Benzene	ND	0.0020
Carbon Tetrachloride	ND	0.0020
Chlorobenzene	ND	0.0020
Chloroform	ND	0.0020
1,4-Dichlorobenzene	ND	0.0020
1,2-Dichloroethane	ND	0.0020
1,1-Dichloroethene	ND	0.0020
Methyl Ethyl Ketone	ND	0.0075
Tetrachloroethene	ND	0.0020
Trichloroethene	ND	0.0020
Vinyl Chloride	ND	0.0050
Date Prepared	01/26/1995	
Date Analyzed	01/26/1995	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	103	74-121
1,2-Dichloroethane-d4	104	70-121
Toluene-d8	99	81-117

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

RECEIVED FEB 6 1995

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P501260
Received: 01/25/1995

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # VS95004a **Spike ID P501226-1**
Results In mg/kg (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS %Rec
Benzene	0.020	ND	0.0212	106
Chlorobenzene	0.020	ND	0.0196	98
1,1-Dichloroethene	0.020	ND	0.0246	123
Toluene	0.020	ND	0.0218	109
Trichloroethene	0.020	ND	0.0211	106

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
Benzene	0.020	0.0214	107	0.94	21	66-142
Chlorobenzene	0.020	0.0203	102	4.0	21	60-133
1,1-Dichloroethene	0.020	0.0244	122	0.82	22	59-172
Toluene	0.020	0.0217	109	0	21	59-139
Trichloroethene	0.020	0.0213	107	0.94	24	62-137

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CHAIN OF CUSTODY REPORT

RECEIVED FEB 6 1995

CLIENT: Wacker Siltronic
ADDRESS: 7200 N.W. Front Ave
Portland, OR
PHONE: 243-2020 X-374 FAX:

REPORT TO: Dianne Mullan
BILLING TO:
P.O. NUMBER: 32001
NCA QUOTE #:

TURNAROUND REQUEST in Business Days *
Organic & Inorganic Analyses: 10 | 5 | 3 | 2 | 1
(Please Select One)
Fuels & Hydrocarbon Analyses: 5 | 3 | 2 | 1
* Turnaround Requests less than standard will incur Rush Charg

PROJECT NAME: FAB-2
PROJECT NUMBER: Box's
SAMPLED BY: Gary Kent Dianne Mullan

FAX RESULTS BY :

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	TCLP 8240	TPH-D	COMMENTS & PRESERVATIVES USED	NCA SAMPLE NUMBER
1. 95-526 - Box 5	1-25-95/1050	S	1	X			P501258-1
2. 95-527 - Box 6	1115	S	1	X			P501259-1
3. 95-528 - Box-22	1130	S	2	X	X		P501260-1
4. 95-529 - Box-24	1145	S	2	X	X		P501261-1
5. 95-530 - Box-25	1200	S	2	X	X		P501262-1
6. 95-531 - Box-26	1245	S	2	X	X		P501263-1
7. 95-532 - Box-27	1300	S	2	X	X		P501264-1
8. 95-525 - Box-28	1040	S	2	X	X		P501265-1
9.							
10.							

Wilbur on ice

RELINQUISHED BY: Dianne Mullan DATE: 1-25-95
PRINT NAME: Dianne Mullan FIRM: Wacker Siltronic TIME: 1655

RECEIVED BY: Sara McClurg DATE: 1-25-95
PRINT NAME: Sara McClurg FIRM: NCA TIME: 1655

RELINQUISHED BY: DATE:
PRINT NAME: FIRM: TIME:

RECEIVED BY: DATE:
PRINT NAME: FIRM: TIME:

ADDITIONAL REMARKS:

PAGE OF

COC Rev 6, 10/94

SCOEPA00019351

SAMPLES SENT TO OUTSIDE LABORATORY
FAB-2

1. WSC#: 95-534

2. Date/Time of Sample: 1-27-95 / 1020

3. Name of Sampler: Dianne Mullan

4. Sample Discription: Drop Box 13 ID#

Other

5. Sent To: ✓ North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

6. Analyses Required: JCLP-8270, 8240, Pest., Herb. (8)
TPH-D

7. Chain of Custody Submitted; (Yes) No

8. Purchase Order Number: 31002

9. Final Results Received On:

10. Additional Notes;

TJR 15 Nov 91
TJR 01 Nov 91
DEM 05 Jan 95

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9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202

CHAIN OF CUSTODY REPORT

CLIENT: Wacker Siltronic
ADDRESS: 7200 N.W. Front Ave Portland, OR
PHONE: 243-2020 x-374 FAX:

REPORT TO: Dianne Mullan
BILLING TO:
P.O. NUMBER: 31002
NCA QUOTE #:

PROJECT NAME: FAB-2
PROJECT NUMBER: Box-23
SAMPLED BY: Dianne Mullan

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: 10 | 5 | ~~3~~ | 2 | 1

(Please Select One)

Fuels & Hydrocarbon Analyses: 5 | ~~3~~ | 2 | 1

** Turnaround Requests less than standard will incur Rush Charges.*

FAX RESULTS BY :

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	JCLP 8270	JCLP 8240	TPH-D	JCLP-Pest.	JCLP-Herb	JCLP (8)				COMMENTS & PRESERVATIVES USED	NCA SAMPLE NUMBER
1. *95-533	1-27-95/1020	S	2	X	X	X	X	X	X				held on ice	
2.														
3. 95-534-Box-23	1-27-95/1020	S	2	X	X	X	X	X	X				held on ice	
4.														
5.														
6.														
7.														
8.														
9.														
10.														

RELINQUISHED BY: Dianne E Mullan	DATE: 1-27-95	RECEIVED BY: Sara McClurg	DATE: 1-27-95
PRINT NAME: Dianne Mullan FIRM: Wacker Siltronic	TIME: 1145	PRINT NAME: Sara McClurg FIRM: NCA	TIME: 1145
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
PRINT NAME: FIRM:	TIME:	PRINT NAME: FIRM:	TIME:

ADDITIONAL REMARKS: JCLP-8240, 8270 & TPH-D sample 95-533 - 1 day turnaround

PAGE OF

COC Rev 6, 10/94

SCOEPA00019353

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RECEIVED FEB 1 0 1995

February 3, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

RE: JOB # BOX-23
P.O.# 31001
PROJECT - FAB-2

Enclosed are test results for your samples received in this lab on Jan. 27, 1995. For your reference, these analyses have been assigned our NCA # P501284.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

Please call if you have any questions.

Respectfully,

Howard Holmes
Project Manager

NORTH CREEK ANALYTICAL

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TCLP per EPA 1311, 6010, 7000 series

Results In mg/L (ppm)

RECEIVED FEB 1 0 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501284
Matrix: soil
Sampled: 01/27/1995
Received: 01/27/1995

Client ID	Lab ID	Analyte	Result	MRL	Date Extracted	Date Prepared	Date Analyzed
95-534-BOX-23	P501284-1	Arsenic	ND	0.50	01/27/95	01/28/95	01/30/95
		Barium	0.71	0.50			
		Cadmium	ND	0.020			
		Chromium	ND	0.020			
		Lead	ND	0.20			
		Mercury	ND	0.0050			
		Selenium	ND	0.25			
		Silver	ND	0.020			

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019355

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TPH-D per Oregon DEQ
Results In mg/kg (ppm)

RECEIVED FEB 1 0 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501284
Matrix: soil
Sampled: 01/27/1995
Received: 01/27/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-534-BOX-23	P501284-1	Diesel/related	2,300	100	01/27/95	01/27/95

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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TCLP VOC's per EPA 8240
Results In mg/kg (ppm)

RECEIVED FEB 10 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501284
Matrix: soil
Received: 01/27/1995
Sampled: 01/27/1995
Prepared: 01/27/95
Analyzed: 01/27/95

Client ID	Lab ID	Analyte	Result	MRL
95-534-BOX-23 *[1]	P501284-1	Benzene	1.4	0.25
		Carbon Tetrachloride	ND	0.25
		Chlorobenzene	ND	0.25
		Chloroform	ND	0.25
		1,4-Dichlorobenzene	ND	0.25
		1,2-Dichloroethane	ND	0.25
		1,1-Dichloroethene	ND	0.25
		Methyl Ethyl Ketone	ND	2.5
		Tetrachloroethene	ND	0.25
		Trichloroethene	ND	0.25
		Vinyl Chloride	ND	0.63

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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TCLP BNAs per EPA 1311, 8270
Results In mg/L (ppm)

RECEIVED FEB 1 0 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501284
Matrix: soil
Received: 01/27/1995
Sampled: 01/27/1995
Prepared: 01/28/95
Analyzed: 01/30/95

Client ID	Lab ID	Analyte	Result	MRL
95-534-BOX-23	P501284-1	Cresols(total)	ND	0.0050
		1,4-Dichlorobenzene	ND	0.010
		2,4-Dinitrotoluene	ND	0.0050
		Hexachloro-1,3-butadiene	ND	0.010
		Hexachlorobenzene	ND	0.0050
		Hexachloroethane	ND	0.010
		Nitrobenzene	ND	0.0050
		Pentachlorophenol	ND	0.010
		Pyridine	ND	0.020
		2,4,5-Trichlorophenol	ND	0.0050
		2,4,6-Trichlorophenol	ND	0.0050

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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RECEIVED FEB 1 0 1995

TCLP Pesticides per EPA 1311, 8080

Results In mg/L (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501284
Matrix: soil
Received: 01/27/1995
Sampled: 01/27/1995
Extracted: 01/27/95
Prepared: 01/28/95
Analyzed: 01/30/95

Client ID	Lab ID	Analyte	Result	MRL
95-534-BOX-23	P501284-1	Chlordane	ND *2	0.0080
		Endrin	ND	0.00010
		Heptachlor	ND	0.00010
		Heptachlor Epoxide	ND	0.00010
		Lindane	ND	0.00010
		Methoxychlor	ND	0.00010
		Toxaphene	ND *2	0.0075

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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TCLP Herbicides per EPA 1311, 8150

Results In mg/L (ppm)

Client:	Wacker Siltronic Corporation	**NCA Project #:**	P501284
Project:	FAB-2	**Matrix:**	soil
		Received:	01/27/1995
		Sampled:	01/27/1995
		Extracted:	01/27/95
		Prepared:	01/30/95
		Analyzed:	01/31/95

Client ID	Lab ID	Analyte	Result	MRL
95-534-BOX-23	P501284-1	2,4-D	ND	0.040
		2,4,5-TP (Silvex)	ND	0.020

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019360

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SURROGATE RECOVERIES (%)

RECEIVED FEB 1 0 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P501284
Received: 01/27/1995

Sample Name	Analyte	Result	Control Limits
TPH-D per Oregon DEQ			
95-534-BOX-23	1-Chlorooctadecane	– *3	50-150
TCLP VOC's per EPA 1311, 8240			
95-534-BOX-23	4-Bromofluorobenzene	99	74-121
	1,2-Dichloroethane-d4	105	70-121
	Toluene-d8	104	81-117
TCLP BNAs per EPA 1311, 8270			
95-534-BOX-23	2-Fluorobiphenyl	76	43-116
	2-Fluorophenol	4.4 *4	21-100
	Nitrobenzene-d5	72	35-114
	Phenol-d6	– *3	10-94
	p-Terphenyl-d14	94	33-141
	2,4,6-Tribromophenol	– *3	10-123
TCLP Pesticides per EPA 1311, 8080			
95-534-BOX-23	Decachlorobiphenyl	50 *5	65-130
	2,4,5,6-Tetrachloro-m-xylene	115	65-130
TCLP Herbicides per EPA 1311, 8150			
95-534-BOX-23	2,4-Dichlorophenyl acetic acid	108	50-150

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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COMMENTS

RECEIVED FEB 1 0 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P501284
Received: 01/27/1995

1. Detection limit is raised due to dilution necessary for analysis.

2. Detection limit is raised due to matrix interference.

3. Unable to calculate surrogate recovery due to matrix interference.

4. Surrogate recovery is out of control limits due to matrix interference.

5. Surrogate recovery is out of control limits. QA criteria are met when one surrogate is within control limits.

SCOEPA00019362

NORTH CREEK ANALYTICAL

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RECEIVED FEB 1 0 1995

February 3, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

Re: Quality Control Data

NCA project number P501284.

Note: Surrogate Recoveries are included in the final report.

QUALITY CONTROL DEFINITIONS

METHOD BLANK RESULTS

The method blank is an analyte-free matrix which is carried through the same analytical process as the samples. It is used to document contamination that may result from the analytical process.

SURROGATE STANDARD

A surrogate standard (i.e., a chemical compound not expected to occur in an environmental sample) is added to each sample, blank, and matrix spike sample just prior to extraction or processing. The recovery of the surrogate standard is used to monitor for unusual matrix effects, gross sample processing errors, etc. Surrogate recovery is evaluated for acceptance by determining whether the measured concentration falls within accepted limits.

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Accuracy is measured by percent recovery as in:

$$\% \text{ Recovery} = \frac{\text{(Measured Concentration)}}{\text{(Actual Concentration)}} \times 100$$

Precision is measured using duplicate tests by relative percent difference.

$$\text{RPD} = \frac{\text{(Result of Test 1 - Result of Test 2)}}{\text{(Result of Test 1 + Result of Test 2)/2}} \times 100$$

If you should have any questions concerning this report, please contact me.

Sincerely,

Howard Holmes
Project Manager

SCOEPA00019364

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BATCH QUALITY CONTROL RESULTS
TCLP per EPA 1311, 6010, 7000 series

RECEIVED FEB 1 0 1995

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P501284
Received: 01/27/1995

METHOD BLANK
Batch # KR95015a
Results In mg/L (ppm)

Compound	Result	MRL
Arsenic	ND	0.50
Barium	ND	0.50
Cadmium	ND	0.020
Chromium	ND	0.020
Lead	ND	0.20
Selenium	ND	0.25
Silver	ND	0.020
Date Extracted	01/27/1995	
Date Prepared	01/28/1995	
Date Analyzed	01/30/1995	

MATRIX SPIKE
Batch # KR95015d **Spike ID P501284-1**
Results In mg/L (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS % Rec	QC Limit % Rec
Arsenic	5.0	ND	5.4	108	50-150
Barium	10	0.71	11	103	50-150
Cadmium	1.0	ND	1.1	110	50-150
Chromium	5.0	ND	5.3	106	50-150
Lead	5.0	ND	5.1	102	50-150
Selenium	1.0	ND	1.1	110	50-150
Silver	2.0	ND	2.0	100	50-150

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BATCH QUALITY CONTROL RESULTS
TCLP per EPA 1311, 6010, 7000 series

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501284
Received: 01/27/1995

RECEIVED FEB 1 0 1995

LABORATORY CONTROL SAMPLE
Batch # KR95015a
Results In mg/L (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Arsenic	5.0	5.6	112	50-150
Barium	10	10	100	50-150
Cadmium	1.0	1.0	100	50-150
Chromium	5.0	5.2	104	50-150
Lead	5.0	5.1	102	50-150
Selenium	1.0	1.1	110	50-150
Silver	2.0	1.9	95	50-150

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BATCH QUALITY CONTROL RESULTS
TCLP per EPA 1311, 6010, 7000 series

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501284
Received: 01/27/1995

RECEIVED FEB 1 0 1995

METHOD BLANK
Batch # ZT95019a
Results In mg/L (ppm)

Compound	Result	MRL
Mercury	ND	0.00050
Date Extracted	01/27/1995	
Date Prepared	01/30/1995	
Date Analyzed	01/30/1995	

MATRIX SPIKE
Batch # ZT95019c **Spike ID P501284A-1**
Results In mg/L (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS % Rec	QC Limit % Rec
Mercury	0.050	ND	0.048	96	50-150

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BATCH QUALITY CONTROL RESULTS
TCLP per EPA 1311, 6010, 7000 series

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501284
Received: 01/27/1995

RECEIVED FEB 1 0 1995

LABORATORY CONTROL SAMPLE
Batch # ZT95019a
Results In mg/L (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Mercury	0.0050	0.0051	102	50-150

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BATCH QUALITY CONTROL RESULTS
TPH-D per Oregon DEQ

RECEIVED FEB 1 0 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501284
Received: 01/27/1995

METHOD BLANK
Batch # FC95002c
Results In mg/kg (ppm)

Compound	Result	MRL
Diesel/related	ND	25
Date Prepared	01/27/1995	
Date Analyzed	01/27/1995	

Surrogate Recovery (%)	Result	Control Limit
1-Chlorooctadecane	94	50-150

DUPLICATE
Batch # FC95002b
Results In mg/kg (ppm)

Duplicate ID P501265-1

Compound	Sample Conc	Dup Conc	RPD	QC Limit RPD
Diesel/related	2,000	2,800	34	50

LABORATORY CONTROL SAMPLE
Batch # FC95002a
Results In mg/kg (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Diesel/related	120	120	100	50-150

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

RECEIVED FEB 1 0 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501284
Received: 01/27/1995

METHOD BLANK
Batch # VE95003c
Results In mg/kg (ppm)

Compound	Result	MRL
Benzene	ND	0.25
Carbon Tetrachloride	ND	0.25
Chlorobenzene	ND	0.25
Chloroform	ND	0.25
1,4-Dichlorobenzene	ND	0.25
1,2-Dichloroethane	ND	0.25
1,1-Dichloroethene	ND	0.25
Methyl Ethyl Ketone	ND	2.5
Tetrachloroethene	ND	0.25
Trichloroethene	ND	0.25
Vinyl Chloride	ND	0.63
Date Prepared	01/27/1995	
Date Analyzed	01/27/1995	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	105	74-121
1,2-Dichloroethane-d4	113	70-121
Toluene-d8	108	81-117

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501284
Received: 01/27/1995

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MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # VE95003a **Spike ID P501226-1**
Results In mg/kg (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS %Rec
Benzene	2.50	ND	2.44	98
Chlorobenzene	2.50	ND	2.30	92
1,1-Dichloroethene	2.50	ND	2.43	97
Toluene	2.50	ND	2.48	99
Trichloroethene	2.50	ND	2.93	117

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
Benzene	2.50	2.56	102	4.0	21	66-142
Chlorobenzene	2.50	2.43	97	5.3	21	60-133
1,1-Dichloroethene	2.50	2.70	108	11	22	59-172
Toluene	2.50	2.64	106	6.8	21	59-139
Trichloroethene	2.50	2.46	98	18	24	62-137

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BATCH QUALITY CONTROL RESULTS
TCLP BNAs per EPA 1311, 8270

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501284
Received: 01/27/1995

RECEIVED FEB 1 0 1995

METHOD BLANK
Batch # ST95002b
Results In mg/L (ppm)

Compound	Result	MRL
Cresols(total)	ND	0.0050
1,4-Dichlorobenzene	ND	0.010
2,4-Dinitrotoluene	ND	0.0050
Hexachloro-1,3-butadiene	ND	0.010
Hexachlorobenzene	ND	0.0050
Hexachloroethane	ND	0.010
Nitrobenzene	ND	0.0050
Pentachlorophenol	ND	0.010
Pyridine	ND	0.020
2,4,5-Trichlorophenol	ND	0.0050
2,4,6-Trichlorophenol	ND	0.0050
Date Prepared	01/28/1995	
Date Analyzed	01/30/1995	

Surrogate Recovery (%)	Result	Control Limit
2-Fluorobiphenyl	105	43-116
2-Fluorophenol	69	21-100
Nitrobenzene-d5	102	35-114
Phenol-d6	46	10-94
p-Terphenyl-d14	112	33-141
2,4,6-Tribromophenol	112	10-123

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BATCH QUALITY CONTROL RESULTS
TCLP BNAs per EPA 1311, 8270

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501284
Received: 01/27/1995

RECEIVED FEB 1 0 1995

MATRIX SPIKE
Batch # ST95002a
Results In ug/L (ppb)

Spike ID P501166-2

Compound	Spike Added	Sample Conc	MS Conc	MS % Rec	QC Limit % Rec
Acenaphthene	100	ND	83	83	47-145
4-Chloro-3-Methylphenol	150	ND	120	80	22-147
2-Chlorophenol	150	ND	120	80	23-134
1,4-Dichlorobenzene	100	ND	72	72	20-124
2,4-Dinitrotoluene	100	ND	80	80	39-139
4-Nitrophenol	150	ND	47	31	D-132
n-Nitroso-di-n-propylamine	100	ND	78	78	D-230
Pentachlorophenol	150	ND	100	67	14-176
Phenol	150	ND	56	37	5-112
Pyrene	100	ND	68	68	52-115
1,2,4-Trichlorobenzene	100	ND	76	76	44-142

LABORATORY CONTROL SAMPLE
Batch # ST95002b
Results In ug/L (ppb)

Compound	True	Found	% Rec	QC Limit % Rec
Acenaphthene	100	89	89	47-145
4-Chloro-3-Methylphenol	150	140	93	22-147
2-Chlorophenol	150	130	87	23-134
1,4-Dichlorobenzene	100	78	78	20-124
2,4-Dinitrotoluene	100	82	82	39-139
4-Nitrophenol	150	54	36	D-132
n-Nitroso-di-n-propylamine	100	86	86	D-230
Pentachlorophenol	150	160	107	14-176
Phenol	150	66	44	5-112
Pyrene	100	80	80	52-115
1,2,4-Trichlorobenzene	100	83	83	44-142

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BATCH QUALITY CONTROL RESULTS
TCLP Pesticides per EPA 1311, 8080

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501284
Received: 01/27/1995

RECEIVED FEB 1 0 1995

METHOD BLANK
Batch # TT95002b
Results In mg/L (ppm)

Compound	Result	MRL
Chlordane	ND	0.0050
Endrin	ND	0.00010
Heptachlor	ND	0.00010
Heptachlor Epoxide	ND	0.00010
Lindane	ND	0.00010
Methoxychlor	ND	0.00010
Toxaphene	ND	0.0050
Date Extracted	01/27/1995	
Date Prepared	01/28/1995	
Date Analyzed	01/30/1995	

Surrogate Recovery (%)	Result	Control Limit
Decachlorobiphenyl	80	65-130
2,4,5,6-Tetrachloro-m-xylene	92	65-130

MATRIX SPIKE
Batch # TT95002a **Spike ID P501166-2**
Results In mg/L (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS % Rec	QC Limit % Rec
Endrin	0.0005	ND	.00043	86	50-150
Heptachlor	0.0005	ND	.00047	94	50-150
Heptachlor Epoxide	0.0005	ND	.00046	92	50-150
Lindane	0.0005	ND	.00049	98	50-150
Methoxychlor	0.0005	ND	.00048	96	50-150

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BATCH QUALITY CONTROL RESULTS
TCLP Pesticides per EPA 1311, 8080

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501284
Received: 01/27/1995

RECEIVED FEB 1 0 1995

LABORATORY CONTROL SAMPLE
Batch # TT95002a
Results In mg/L (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Chlordane	0.020	0.018	90	50-150
Endrin	0.0005	.00045	90	30-147
Heptachlor	0.0005	.00050	100	34-111
Heptachlor Epoxide	0.0005	.00048	96	50-150
Lindane	0.0005	.00052	104	32-127
Methoxychlor	0.0005	.00050	100	50-150
Toxaphene	0.040	0.037	93	50-150

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BATCH QUALITY CONTROL RESULTS
TCLP Herbicides per EPA 1311, 8150

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P501284
Received: 01/27/1995

RECEIVED FEB 1 0 1995

METHOD BLANK
Batch # HP95003b
Results In mg/L (ppm)

Compound	Result	MRL
2,4-D	ND	0.040
2,4,5-TP (Silvex)	ND	0.020
Date Extracted	01/27/1995	
Date Prepared	01/30/1995	
Date Analyzed	01/31/1995	

Surrogate Recovery (%)	Result	Control Limit
2,4-Dichlorophenyl acetic acid	99	50-150

MATRIX SPIKE
Batch # HP95003a
Results In mg/L (ppm)
Spike ID P501166-2

Compound	Spike Added	Sample Conc	MS Conc	MS % Rec	QC Limit % Rec
2,4-D	0.020	ND	0.015	75	50-150
2,4,5-TP (Silvex)	0.062	ND	0.048	77	50-150

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BATCH QUALITY CONTROL RESULTS
TCLP Herbicides per EPA 1311, 8150

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501284
Received: 01/27/1995

RECEIVED FEB 1 0 1995

LABORATORY CONTROL SAMPLE
Batch # HP95003b
Results In mg/L (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
2,4-D	0.12	0.086	72	50-150
2,4,5-TP (Silvex)	0.60	0.53	88	50-150

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CHAIN OF CUSTODY REPORT

CLIENT: Wacker Siltronic
ADDRESS: 7200 N.W. Front Ave Portland, OR
PHONE: 243-2020 x-374 FAX:
PROJECT NAME: FAB-2
PROJECT NUMBER: Box-23
SAMPLED BY: Dianne Mullan

REPORT TO: Dianne Mullan
BILLING TO:
P.O. NUMBER: 31002
NCA QUOTE #:

TURNAROUND REQUEST in Business Days *
Organic & Inorganic Analyses: 10 | 5 | X 3 | 2 | 1
(Please Select One)
Fuels & Hydrocarbon Analyses: 5 | X 3 | 2 | 1
* Turnaround Requests less than standard will incur Rush Char.
FAX RESULTS BY :

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	JCLP 8270	JCLP 8240	TPH-D	JCLP-Pest.	JCLP-Herb	JCLP (8)				COMMENTS & PRESERVATIVES USED	NCA SAMPLE NUMBER
1. *95-533	1-27-95/1020	S	2	X	X	X	X	X	X				held on ice	P501283
2.														
3. 95-534-Box-23	1-27-95/1020	S	2	X	X	X	X	X	X				held on ice	P501284
4.														
5.														
6.														
7.													RECEIVED FEB 10 1995	
8.														
9.														
10.														

RELINQUISHED BY: Dianne E Mullan DATE: 1-27-95
PRINT NAME: Dianne Mullan FIRM: Wacker Siltronic TIME: 1145

RECEIVED BY: Sara McClurg DATE: 1-27-95
PRINT NAME: Sara McClurg FIRM: NCA TIME: 1145

RELINQUISHED BY: DATE:
PRINT NAME: FIRM: TIME:

RECEIVED BY: DATE:
PRINT NAME: FIRM: TIME:

ADDITIONAL REMARKS: JCLP-8240, 8270 & TPH-D sample 95-533 - 1 day turnaround

PAGE OF

COC Rev 6, 10/94

SCOEPA00019378

SAMPLES SENT TO OUTSIDE LABORATORY
FAB-2

1. WSC#: 95-542

2. Date/Time of Sample: 2-24-95 / 0840

3. Name of Sampler: Gary Kent, Dennis Mullen

4. Sample Discription: Drop Box 23 ID# 169

Other _____

5. Sent To: ✓ North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

___ _____

_____

_____

6. Analyses Required: BETX 8020

_____

7. Chain of Custody Submitted; (Yes) No

8. Purchase Order Number: 31002

9. Final Results Received On: _____

10. Additional Notes; _____

_____

_____

_____

_____

TJR 15 Nov 91
TJR 01 Nov 91
DEM 05 Jan 95

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INVOICE FOR ANALYTICAL SERVICES

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Accounts Payable

Project Manager: Dianne Mullan

Project: FAB-2, #BOXES

Invoice Number: 25020209

Invoice Date: 02/28/95

P.O. #31002

Soil, Received 2/24/95

NCA Sample #: P502274

QTY	ANALYSES PERFORMED	T.A.T.	UNIT PRICE	NET AMOUNT
1	BTEX Distinction	2 Day	70.00	70.00

COPY

Invoice Total $ 70.00

```
*****************************************
*                                       *
* Remit To: North Creek Analytical, Inc. *
*           18939 - 120th Ave. NE  #101 *
*           Bothell, WA      98011-9508 *
*                                       *
*****************************************
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TERMS: NET 30 DAYS
PAST DUE INVOICES ARE SUBJECT TO A 1.5% PER MONTH SERVICE CHARGE

NORTH CREEK ANALYTICAL

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February 28, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

RE: JOB # BOXES
P.O.# 31002
PROJECT - FAB-2

Enclosed are test results for your samples received in this lab on Feb. 24, 1995. For your reference, these analyses have been assigned our NCA # P502274.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

This report will be accompanied by a separate Quality Control Data Report, unless omitted by client request.

Please call if you have any questions.

Respectfully,

Howard Holmes
Project Manager

NORTH CREEK ANALYTICAL
18939 120th Avenue N.E., Suite 101 • Bothell, WA 98011-9508 (206) 481-9200 • FAX 485-2992
East 11115 Montgomery, Suite B • Spokane, WA 99206-4776 (509) 924-9200 • FAX 924-9290
9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

BTEX per EPA 8020
Results In ug/kg (ppb)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P502274
Matrix: soil
Sampled: 02/24/1995
Received: 02/24/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-542-Box-23	P502274-1	Benzene	ND	13	02/24/95	02/24/95
		Toluene	ND	13		
		Ethylbenzene	ND	13		
		Xylene (total)	ND	13		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019382

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SURROGATE RECOVERIES (%)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P502274
Received: 02/24/1995

Sample Name	Analyte	Result	Control Limits
BTEX per EPA 8020			
95-542-Box-23	4-Bromofluorobenzene	100	63-126

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019383

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February 28, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

Re: Quality Control Data
JOB # BOXES
P.O.# 31002
PROJECT - FAB-2

NCA project number P502274.

Note: Surrogate Recoveries are included in the final report.

QUALITY CONTROL DEFINITIONS

METHOD BLANK RESULTS

The method blank is an analyte-free matrix which is carried through the same analytical process as the samples. It is used to document contamination that may result from the analytical process.

SURROGATE STANDARD

A surrogate standard (i.e., a chemical compound not expected to occur in an environmental sample) is added to each sample, blank, and matrix spike sample just prior to extraction or processing. The recovery of the surrogate standard is used to monitor for unusual matrix effects, gross sample processing errors, etc. Surrogate recovery is evaluated for acceptance by determining whether the measured concentration falls within accepted limits.

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Accuracy is measured by percent recovery as in:

$$\% \text{ Recovery} = \frac{\text{(Measured Concentration)}}{\text{(Actual Concentration)}} \times 100$$

Precision is measured using duplicate tests by relative percent difference.

$$\text{RPD} = \frac{\text{(Result of Test 1 - Result of Test 2)}}{\text{(Result of Test 1 + Result of Test 2)/2}} \times 100$$

If you should have any questions concerning this report, please contact me.

Sincerely,

Howard Holmes
Project Manager

SCOEPA00019385

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BATCH QUALITY CONTROL RESULTS
BTEX per EPA 8020

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P502274
Received: 02/24/1995

METHOD BLANK
Batch # BS95005d
Results In ug/kg (ppb)

Compound	Result	MRL
Benzene	ND	13
Toluene	ND	13
Ethylbenzene	ND	13
Xylene (total)	ND	13
Date Prepared	02/24/1995	
Date Analyzed	02/24/1995	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	108	63-126

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # BS95005a **Spike ID P502225-6**
Results In ug/kg (ppb)

Compound	Spike Added	Sample Conc	MS Conc	MS %Rec
Benzene	20	ND	13.6	68
Chlorobenzene	20	ND	15.1	76
Ethylbenzene	20	ND	16.0	80
Toluene	20	0.519	17.5	85
o-Xylene	20	ND	15.8	79

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
Benzene	20	14.5	73	7.1	17	56-123
Chlorobenzene	20	16.1	81	6.4	16	53-124
Ethylbenzene	20	17.0	85	6.1	20	45-130
Toluene	20	18.4	89	4.6	24	54-123
o-Xylene	20	16.6	83	4.9	20	50-127

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BATCH QUALITY CONTROL RESULTS
BTEX per EPA 8020

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P502274
Received: 02/24/1995

LABORATORY CONTROL SAMPLE
Batch # BS95005c
Results In ug/kg (ppb)

Compound	True	Found	% Rec	QC Limit % Rec
Benzene	20	17.8	89	69-138
Chlorobenzene	20	20.2	101	72-137
Ethylbenzene	20	20.8	104	61-141
Toluene	20	22.3	112	53-151
o-Xylene	20	20.6	103	62-144

SCOEPA00019387

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CHAIN OF CUSTODY REPORT

CLIENT: Wacker Siltronic

ADDRESS: 7200 N.W. Front Ave
Portland, OR

PHONE: 243-2020 x374 FAX: 241-7599

PROJECT NAME: FAB-2

PROJECT NUMBER: Boxes

SAMPLED BY: Dianne Mullan, Gary Kent

REPORT TO: Dianne Mullan

BILLING TO:

P.O. NUMBER: 31002

NCA QUOTE #:

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: 10 | 5 | 3 | 2 | 1

(Please Select One)

Fuels & Hydrocarbon Analyses: 5 | 3 | 2 | X

* Turnaround Requests less than standard will incur Rush Charge.

FAX RESULTS BY :

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	Analysis Request: BTEX 8020	COMMENTS & PRESERVATIVES USED	NCA SAMPLE NUMBER
1. 95-540 - Box-5	2-24-95 1015	S	1	X		P502272
2. 95-541 - Box-6	2-24-95 0850	S	1	X	Attempts to field on ice	P502273
3. 95-542 - Box-23	2-24-95 0840	S	1	X		P502274
4. 95-543 - Box-24	2-24-95 0820	S	1	X		P502275
5. 95-544 - Box-25	2-24-95 0810	S	1	X		P502276
6. 95-545 - Box-26	2-24-95 0800	S	1	X		P502277
7.						
8.						
9.						
10.						

RELINQUISHED BY:	DATE: 2-24-95	RECEIVED BY: Sara McClary	DATE: 2-24-95
PRINT NAME: Dianne Mullan FIRM: Wacker Siltronic	TIME: 1135	PRINT NAME: Sara McClary FIRM: NCA	TIME: 1135
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
PRINT NAME: FIRM:	TIME:	PRINT NAME: FIRM:	TIME:

ADDITIONAL REMARKS:

PAGE OF

COC Rev 6, 10/94

SCOEPA00019388

SAMPLES SENT TO OUTSIDE LABORATORY
FAB-2

1. WSC#: 95- ~~58~~ 525

2. Date/Time of Sample: 1-25-95 / 1145

3. Name of Sampler: Gary Kent, Dianne Mullen

4. Sample Discription: Drop Box 24 ID# 910202

Other _____

5. Sent To: ✓ North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

6. Analyses Required: JCLP- 8240 - TPH-D, JCLP-8-
JCLP-8150, JCLP-8270, JCLP-Pest, Flash pt.
TPH-G, pH -

7. Chain of Custody Submitted: (Yes) No

8. Purchase Order Number: 31002

9. Final Results Received On: _____

10. Additional Notes; _____

TJR 15 Nov 91
TJR 01 Nov 91
DEM 05 Jan 95

NORTH CREEK ANALYTICAL

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January 31, 1995

RECEIVED FEB 1 0 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

RE: JOB # BOX'S
P.O.#
PROJECT - FAB-2

Enclosed are test results for your samples received in this lab on Jan. 25, 1995. For your reference, these analyses have been assigned our NCA # P501261.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

Please call if you have any questions.

Respectfully,

Howard Holmes
Project Manager

NORTH CREEK ANALYTICAL
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RECEIVED FEB 1 0 1995

pH per EPA 9045
Results In standard units

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501261
Matrix: soil
Sampled: 01/25/1995
Received: 01/25/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-529-BOX-24	P501261-1	pH	5.8	1-14	01/30/95	01/30/95

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019391

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TCLP per EPA 1311, 6010, 7000 series

Results In mg/L (ppm)

RECEIVED FEB 1 0 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501261
Matrix: soil
Sampled: 01/25/1995
Received: 01/25/1995

Client ID	Lab ID	Analyte	Result	MRL	Date Extracted	Date Prepared	Date Analyzed
95-529-BOX-24	P501261-1	Arsenic	ND	0.50	01/27/95	01/28/95	01/30/95
		Barium	ND	0.50			
		Cadmium	ND	0.020			
		Chromium	ND	0.020			
		Lead	ND	0.20			
		Mercury	ND	0.0050			
		Selenium	ND	0.25			
		Silver	ND	0.020			

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019392

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Flashpoint (PMCC) per EPA 1010

Results In degrees F

RECEIVED FEB 1 0 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501261
Matrix: soil
Sampled: 01/25/1995
Received: 01/25/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-529-BOX-24	P501261-1	No flash to	150		01/26/95	01/26/95

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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TPH-G per Oregon DEQ

Results In mg/kg (ppm)

RECEIVED FEB 1 0 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501261
Matrix: soil
Sampled: 01/25/1995
Received: 01/25/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-529-BOX-24	P501261-1	Gasoline	460	20	01/26/95	01/26/95

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019394

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TPH-D per Oregon DEQ
Results In mg/kg (ppm)

RECEIVED FEB 1 0 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501261
Matrix: soil
Sampled: 01/25/1995
Received: 01/25/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-529-BOX-24	P501261-1	Diesel/related	19,000	500	01/25/95	01/26/95

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019395

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TCLP VOC's per EPA 8240

Results In mg/kg (ppm)

RECEIVED FEB 1 0 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501261
Matrix: soil
Sampled: 01/25/1995
Received: 01/25/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-529-BOX-24	P501261-1	Benzene	1.1	0.25	01/26/95	01/26/95
		Carbon Tetrachloride	ND	0.25		
		Chlorobenzene	ND	0.25		
		Chloroform	ND	0.25		
		1,4-Dichlorobenzene	ND	0.25		
		1,2-Dichloroethane	ND	0.25		
		1,1-Dichloroethene	ND	0.25		
		Methyl Ethyl Ketone	ND	0.94		
		Tetrachloroethene	ND	0.25		
		Trichloroethene	ND	0.25		
		Vinyl Chloride	ND	0.63		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019396

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TCLP BNAs per EPA 1311, 8270

Results In mg/L (ppm)

RECEIVED FEB 1 0 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501261
Matrix: soil
Sampled: 01/25/1995
Received: 01/25/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-529-BOX-24	P501261-1	Cresols(total)	ND	0.0050	01/28/95	01/30/95
		1,4-Dichlorobenzene	ND	0.010		
		2,4-Dinitrotoluene	ND	0.0050		
		Hexachloro-1,3-butadiene	ND	0.010		
		Hexachlorobenzene	ND	0.0050		
		Hexachloroethane	ND	0.010		
		Nitrobenzene	ND	0.0050		
		Pentachlorophenol	ND	0.010		
		Pyridine	ND	0.020		
		2,4,5-Trichlorophenol	ND	0.0050		
		2,4,6-Trichlorophenol	ND	0.0050		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

NORTH CREEK ANALYTICAL

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TCLP Pesticides per EPA 1311, 8080

Results In mg/L (ppm)

RECEIVED FEB 1 0 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501261
Matrix: soil
Sampled: 01/25/1995
Received: 01/25/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-529-BOX-24	P501261-1	Chlordane	ND *[1]	0.015	01/28/95	01/30/95
		Endrin	ND	0.00010		
		Heptachlor	ND	0.00010		
		Heptachlor Epoxide	ND	0.00010		
		Lindane	ND	0.00010		
		Methoxychlor	ND	0.00010		
		Toxaphene	ND *[1]	0.010		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019398

NORTH CREEK ANALYTICAL
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TCLP Herbicides per EPA 1311, 8150

Results In mg/L (ppm)

RECEIVED FEB 1 0 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501261
Matrix: soil
Sampled: 01/25/1995
Received: 01/25/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-529-BOX-24	P501261-1	2,4-D	ND	0.040	01/30/95	01/31/95
		2,4,5-TP (Silvex)	ND	0.020		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

NORTH CREEK ANALYTICAL
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SURROGATE RECOVERIES (%)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P501261
Received: 01/25/1995

Sample Name	Analyte	Result	Control Limits
TPH-G per Oregon DEQ			
95-529-BOX-24	4-Bromofluorobenzene	109	63-126
	Trifluorotoluene	64	50-150
TPH-D per Oregon DEQ			
95-529-BOX-24	1-Chlorooctadecane	-- *2	50-150
TCLP VOC's per EPA 1311, 8240			
95-529-BOX-24	4-Bromofluorobenzene	94	74-121
	1,2-Dichloroethane-d4	82	70-121
	Toluene-d8	95	81-117
TCLP BNAs per EPA 1311, 8270			
95-529-BOX-24	2-Fluorobiphenyl	81	43-116
	2-Fluorophenol	5.9 *3	21-100
	Nitrobenzene-d5	137 *3	35-114
	Phenol-d6	0.63 *3	10-94
	p-Terphenyl-d14	89	33-141
	2,4,6-Tribromophenol	19	10-123
TCLP Pesticides per EPA 1311, 8080			
95-529-BOX-24	Decachlorobiphenyl	63 *4	65-130
	2,4,5,6-Tetrachloro-m-xylene	88	65-130
TCLP Herbicides per EPA 1311, 8150			
95-529-BOX-24	2,4-Dichlorophenyl acetic acid	104	50-150

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019400

NORTH CREEK ANALYTICAL

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COMMENTS

RECEIVED FEB 1 0 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P501261
Received: 01/25/1995

1. Detection limit is raised due to matrix interference.

2. Unable to calculate surrogate recovery due to matrix interference.

3. Surrogate recovery is out of control limits due to matrix interference.

4. Surrogate recovery is out of control limits. QA criteria are met when one surrogate is within control limits.

SCOEPA00019401

NORTH CREEK ANALYTICAL

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

RECEIVED FEB 1 0 1995

February 7, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

Re: Quality Control Data

NCA project number P501261.

Note: Surrogate Recoveries are included in the final report.

QUALITY CONTROL DEFINITIONS

METHOD BLANK RESULTS

The method blank is an analyte-free matrix which is carried through the same analytical process as the samples. It is used to document contamination that may result from the analytical process.

SURROGATE STANDARD

A surrogate standard (i.e., a chemical compound not expected to occur in an environmental sample) is added to each sample, blank, and matrix spike sample just prior to extraction or processing. The recovery of the surrogate standard is used to monitor for unusual matrix effects, gross sample processing errors, etc. Surrogate recovery is evaluated for acceptance by determining whether the measured concentration falls within accepted limits.

NORTH CREEK ANALYTICAL

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Accuracy is measured by percent recovery as in:

$$\% \text{ Recovery} = \frac{\text{(Measured Concentration)}}{\text{(Actual Concentration)}} \times 100$$

Precision is measured using duplicate tests by relative percent difference.

$$\text{RPD} = \frac{\text{(Result of Test 1 - Result of Test 2)}}{\text{(Result of Test 1 + Result of Test 2)/2}} \times 100$$

If you should have any questions concerning this report, please contact me.

Sincerely,

Howard Holmes
Project Manager

SCOEPA00019403

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BATCH QUALITY CONTROL RESULTS
pH per EPA 9040

RECEIVED FEB 1 0 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501261
Received: 01/25/1995

DUPLICATE
Batch # IK95012a
Results In pH

Compound	Sample Result	Dup Result
pH	6.8	6.8

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BATCH QUALITY CONTROL RESULTS
TCLP per EPA 1311, 6010, 7000 series

RECEIVED FEB 1 0 1995

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P501261
Received: 01/25/1995

METHOD BLANK
Batch # KR95015a
Results In mg/L (ppm)

Compound	Result	MRL
Arsenic	ND	0.50
Barium	ND	0.50
Cadmium	ND	0.020
Chromium	ND	0.020
Lead	ND	0.20
Selenium	ND	0.25
Silver	ND	0.020
Date Extracted	01/27/1995	
Date Prepared	01/28/1995	
Date Analyzed	01/30/1995	

MATRIX SPIKE
Batch # KR95015a **Spike ID P501261A-1**
Results In mg/L (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS % Rec	QC Limit % Rec
Arsenic	5.0	ND	5.7	114	50-150
Barium	10	ND	10	100	50-150
Cadmium	1.0	ND	0.94	94	50-150
Chromium	5.0	ND	5.1	102	50-150
Lead	5.0	ND	4.4	88	50-150
Selenium	1.0	ND	1.1	110	50-150
Silver	2.0	ND	1.9	95	50-150

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BATCH QUALITY CONTROL RESULTS
TCLP per EPA 1311, 6010, 7000 series

RECEIVED FEB 1 0 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501261
Received: 01/25/1995

LABORATORY CONTROL SAMPLE
Batch # KR95015a
Results In mg/L (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Arsenic	5.0	5.6	112	50-150
Barium	10	10	100	50-150
Cadmium	1.0	1.0	100	50-150
Chromium	5.0	5.2	104	50-150
Lead	5.0	5.1	102	50-150
Selenium	1.0	1.1	110	50-150
Silver	2.0	1.9	95	50-150

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BATCH QUALITY CONTROL RESULTS
TCLP per EPA 1311, 6010, 7000 series

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P501261
Received: 01/25/1995

METHOD BLANK
Batch # ZT95019a
Results In mg/L (ppm)

Compound	Result	MRL
Mercury	ND	0.00050
Date Extracted	01/27/1995	
Date Prepared	01/30/1995	
Date Analyzed	01/30/1995	

MATRIX SPIKE
Batch # ZT95019a **Spike ID P501261A-1**
Results In mg/L (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS % Rec	QC Limit % Rec
Mercury	0.050	ND	0.050	100	50-150

LABORATORY CONTROL SAMPLE
Batch # ZT95019a
Results In mg/L (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Mercury	0.0050	0.0051	102	50-150

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BATCH QUALITY CONTROL RESULTS
Flashpoint (PMCC) per EPA 1010

RECEIVED FEB 1 0 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501261
Received: 01/25/1995

DUPLICATE
Batch # FF95002a
Results In Flashpoint

Compound	Sample Result	Dup Result
No Flash to	150	150

SCOEPA00019408

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BATCH QUALITY CONTROL RESULTS
TPH-G per Oregon DEQ

RECEIVED FEB 1 0 1995

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P501261
Received: 01/25/1995

METHOD BLANK
Batch # BT95003b
Results In mg/kg (ppm)

Compound	Result	MRL
Gasoline	ND	2.0
Date Prepared	01/26/1995	
Date Analyzed	01/26/1995	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	97	63-126
Trifluorotoluene	94	50-150

DUPLICATE
Batch # BT95003a
Results In mg/kg (ppm)
Duplicate ID P501238-1

Compound	Sample Conc	Dup Conc	RPD	QC Limit RPD
Gasoline	ND	ND	0	50

LABORATORY CONTROL SAMPLE
Batch # BT95003a
Results In mg/kg (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Gasoline	31	36	116	50-150

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BATCH QUALITY CONTROL RESULTS
TPH-D per Oregon DEQ

RECEIVED FEB 1 6 1995

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P501261
Received: 01/25/1995

METHOD BLANK
Batch # FC95002b
Results In mg/kg (ppm)

Compound	Result	MRL
Diesel/related	ND	25
Date Prepared	01/25/1995	
Date Analyzed	01/25/1995	

Surrogate Recovery (%)	Result	Control Limit
1-Chlorooctadecane	101	50-150

DUPLICATE
Batch # FC95002b
Results In mg/kg (ppm)

Duplicate ID P501265-1

Compound	Sample Conc	Dup Conc	RPD	QC Limit RPD
Diesel/related	2,000	2,800	34	50

LABORATORY CONTROL SAMPLE
Batch # FA95002a
Results In mg/kg (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Diesel/related	120	120	100	50-150

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

RECEIVED FEB 1 0 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501261
Received: 01/25/1995

METHOD BLANK
Batch # VE95003b
Results In mg/kg (ppm)

Compound	Result	MRL
Benzene	ND	0.25
Carbon Tetrachloride	ND	0.25
Chlorobenzene	ND	0.25
Chloroform	ND	0.25
1,4-Dichlorobenzene	ND	0.25
1,2-Dichloroethane	ND	0.25
1,1-Dichloroethene	ND	0.25
Methyl Ethyl Ketone	ND	0.94
Tetrachloroethene	ND	0.25
Trichloroethene	ND	0.25
Vinyl Chloride	ND	0.63
Date Prepared	01/26/1995	
Date Analyzed	01/26/1995	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	98	74-121
1,2-Dichloroethane-d4	86	70-121
Toluene-d8	98	81-117

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501261
Received: 01/25/1995

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # VE95003a **Spike ID P501226-1**
Results in mg/kg (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS %Rec
Benzene	2.50	ND	2.44	98
Chlorobenzene	2.50	ND	2.30	92
1,1-Dichloroethene	2.50	ND	2.43	97
Toluene	2.50	ND	2.48	99
Trichloroethene	2.50	ND	2.93	117

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
Benzene	2.50	2.56	102	4.0	21	66-142
Chlorobenzene	2.50	2.43	97	5.3	21	60-133
1,1-Dichloroethene	2.50	2.70	108	11	22	59-172
Toluene	2.50	2.64	106	6.8	21	59-139
Trichloroethene	2.50	2.46	98	18	24	62-137

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BATCH QUALITY CONTROL RESULTS
TCLP BNAs per EPA 1311, 8270

RECEIVED FEB 1 0 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501261
Received: 01/25/1995

METHOD BLANK
Batch # ST95002b
Results In mg/L (ppm)

Compound	Result	MRL
Cresols(total)	ND	0.0050
1,4-Dichlorobenzene	ND	0.010
2,4-Dinitrotoluene	ND	0.0050
Hexachloro-1,3-butadiene	ND	0.010
Hexachlorobenzene	ND	0.0050
Hexachloroethane	ND	0.010
Nitrobenzene	ND	0.0050
Pentachlorophenol	ND	0.010
Pyridine	ND	0.020
2,4,5-Trichlorophenol	ND	0.0050
2,4,6-Trichlorophenol	ND	0.0050
Date Prepared	01/28/1995	
Date Analyzed	01/30/1995	

Surrogate Recovery (%)	Result	Control Limit
2-Fluorobiphenyl	105	43-116
2-Fluorophenol	69	21-100
Nitrobenzene-d5	102	35-114
Phenol-d6	46	10-94
p-Terphenyl-d14	112	33-141
2,4,6-Tribromophenol	112	10-123

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BATCH QUALITY CONTROL RESULTS
TCLP BNAs per EPA 1311, 8270

RECEIVED FEB 1 0 1995

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P501261
Received: 01/25/1995

MATRIX SPIKE
Batch # ST95002a
Results In ug/L (ppb)

Spike ID P501166-2

Compound	Spike Added	Sample Conc	MS Conc	MS % Rec	QC Limit % Rec
Acenaphthene	100	ND	83	83	47-145
4-Chloro-3-Methylphenol	150	ND	120	80	22-147
2-Chlorophenol	150	ND	120	80	23-134
1,4-Dichlorobenzene	100	ND	72	72	20-124
2,4-Dinitrotoluene	100	ND	80	80	39-139
4-Nitrophenol	150	ND	47	31	D-132
n-Nitroso-di-n-propylamine	100	ND	78	78	D-230
Pentachlorophenol	150	ND	100	67	14-176
Phenol	150	ND	56	37	5-112
Pyrene	100	ND	68	68	52-115
1,2,4-Trichlorobenzene	100	ND	76	76	44-142

LABORATORY CONTROL SAMPLE
Batch # ST95002b
Results In ug/L (ppb)

Compound	True	Found	% Rec	QC Limit % Rec
Acenaphthene	100	89	89	47-145
4-Chloro-3-Methylphenol	150	140	93	22-147
2-Chlorophenol	150	130	87	23-134
1,4-Dichlorobenzene	100	78	78	20-124
2,4-Dinitrotoluene	100	82	82	39-139
4-Nitrophenol	150	54	36	D-132
n-Nitroso-di-n-propylamine	100	86	86	D-230
Pentachlorophenol	150	160	107	14-176
Phenol	150	66	44	5-112
Pyrene	100	80	80	52-115
1,2,4-Trichlorobenzene	100	83	83	44-142

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BATCH QUALITY CONTROL RESULTS
TCLP Pesticides per EPA 1311, 8080

RECEIVED FEB 1 0 1995

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P501261
Received: 01/25/1995

METHOD BLANK
Batch # TT95002b
Results In mg/L (ppm)

Compound	Result	MRL
Chlordane	ND	0.0050
Endrin	ND	0.00010
Heptachlor	ND	0.00010
Heptachlor Epoxide	ND	0.00010
Lindane	ND	0.00010
Methoxychlor	ND	0.00010
Toxaphene	ND	0.0050
Date Extracted	01/27/1995	
Date Prepared	01/28/1995	
Date Analyzed	01/30/1995	

Surrogate Recovery (%)	Result	Control Limit
Decachlorobiphenyl	80	65-130
2,4,5,6-Tetrachloro-m-xylene	92	65-130

MATRIX SPIKE
Batch # TT95002a **Spike ID P501166-2**
Results In mg/L (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS % Rec	QC Limit % Rec
Endrin	0.0005	ND	.00043	86	50-150
Heptachlor	0.0005	ND	.00047	94	50-150
Heptachlor Epoxide	0.0005	ND	.00046	92	50-150
Lindane	0.0005	ND	.00049	98	50-150
Methoxychlor	0.0005	ND	.00048	96	50-150

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BATCH QUALITY CONTROL RESULTS
TCLP Pesticides per EPA 1311, 8080

RECEIVED FEB 1 0 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501261
Received: 01/25/1995

LABORATORY CONTROL SAMPLE
Batch # TT95002a
Results In mg/L (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Chlordane	0.020	0.018	90	50-150
Endrin	0.0005	.00045	90	30-147
Heptachlor	0.0005	.00050	100	34-111
Heptachlor Epoxide	0.0005	.00048	96	50-150
Lindane	0.0005	.00052	104	32-127
Methoxychlor	0.0005	.00050	100	50-150
Toxaphene	0.040	0.037	93	50-150

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BATCH QUALITY CONTROL RESULTS
TCLP Herbicides per EPA 1311, 8150

RECEIVED FEB 1 0 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501261
Received: 01/25/1995

METHOD BLANK
Batch # HP95003b
Results In mg/L (ppm)

Compound	Result	MRL
2,4-D	ND	0.040
2,4,5-TP (Silvex)	ND	0.020
Date Extracted	01/27/1995	
Date Prepared	01/30/1995	
Date Analyzed	01/31/1995	

Surrogate Recovery (%)	Result	Control Limit
2,4-Dichlorophenyl acetic acid	99	50-150

MATRIX SPIKE
Batch # HP95003a
Results In mg/L (ppm)

Spike ID P501166-2

Compound	Spike Added	Sample Conc	MS Conc	MS % Rec	QC Limit % Rec
2,4-D	0.020	ND	0.015	75	50-150
2,4,5-TP (Silvex)	0.062	ND	0.048	77	50-150

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BATCH QUALITY CONTROL RESULTS
TCLP Herbicides per EPA 1311, 8150

RECEIVED FEB 1 0 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501261
Received: 01/25/1995

LABORATORY CONTROL SAMPLE
Batch # HP95003b
Results In mg/L (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
2,4-D	0.12	0.086	72	50-150
2,4,5-TP (Silvex)	0.60	0.53	88	50-150

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CHAIN OF CUSTODY REPORT

RECEIVED FEB 1 0 1995

CLIENT: Wacker Siltronic
ADDRESS: 7200 N.W. Front Ave Portland, OR
PHONE: 243-2020 X-374 FAX:

REPORT TO: Dianne Mullan
BILLING TO:
P.O. NUMBER: 32001
NCA QUOTE #:

PROJECT NAME: FAB-2
PROJECT NUMBER: Box's
SAMPLED BY: Gary Kent, Dianne Mullan

TURNAROUND REQUEST in Business Days *
Organic & Inorganic Analyses: 10 | 5 | 3 | 2 | 1
(Please Select One)
Fuels & Hydrocarbon Analyses: 5 | 3 | 2 | 1
* Turnaround Requests less than standard will incur Rush Charg
FAX RESULTS BY :

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	TC LP 5240	TCLP (8)	TPH-D	8150 (TCD)	Flashpt / pH	TPH-G	TCLP 8270	TCLP Pest	COMMENTS & PRESERVATIVES USED	NCA SAMPLE NUMBER
1. 95-526 - Box 5	1-25-95/1050	S	1	X									P501258-1
2. 95-527 - Box 6	1115	S	1	X									P501259-1
3. 95-528 - Box-22	1130	S	2	X		X							P501260-1
4. 95-529 - Box-24	1145	S	2	X	X	X	X	X	X	X	X		P501261-1
5. 95-530 - Box-25	1200	S	2	X		X							P501262-1
6. 95-531 - Box-26	1245	S	2	X		X							P501263-1
7. 95-532 - Box-27	1300	S	2	X		X							P501264-1
8. 95-525 - Box-28	1040	S	2	X		X							P501265-1
9.													
10.													

Added on COC

RELINQUISHED BY: Dianne Mullan	DATE: 1-25-95	RECEIVED BY: Sara McClurg	DATE: 1-25-95
PRINT NAME: Dianne Mullan FIRM: Wacker Siltronic	TIME: 16 55	PRINT NAME: Sara McClurg FIRM: NCA	TIME: 1655
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
PRINT NAME: FIRM:	TIME:	PRINT NAME: FIRM:	TIME:

ADDITIONAL REMARKS:
* Tests added per Dianne Mullan 1-26-95 0800. Sara McClurg

PAGE OF

COC Rev 6, 10/94

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CHAIN OF CUSTODY REPORT

CLIENT: Wacker Siltronic

ADDRESS: 7200 N.W. Front Ave. Portland OR

PHONE: 243-2020 x374 FAX: 241-7599

REPORT TO: Dianne Mullan

BILLING TO:

P.O. NUMBER: 31002

NCA QUOTE #:

PROJECT NAME: FAB-2

PROJECT NUMBER: Boxes

SAMPLED BY: Dianne Mullan, Gary Kent

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: 10 | 5 | 3 | 2 | 1

(Please Select One)

Fuels & Hydrocarbon Analyses: 5 | 3 | 2 | ☒

* Turnaround Requests less than standard will incur Rush Charges.

FAX RESULTS BY :

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	Analysis Request: BTEX 8020	COMMENTS & PRESERVATIVES USED	NCA SAMPLE NUMBER
1. 95-540 - Box-5	2-24-95 1015	S	1	X		P502272
2. 95-541 - Box-6	2-24-95 0850	S	1	X	Attempted field on ice	P502273
3. 95-542 - Box-23	2-24-95 0840	S	1	X		P502274
4. 95-543 - Box-24	2-24-95 0820	S	1	X		P502275
5. 95-544 - Box-25	2-24-95 0810	S	1	X		P502276
6. 95-545 - Box-26	2-24-95 0800	S	1	X		P502277
7.						
8.						
9.						
10.						

RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
Dianne E Mullan	2-24-95	Sara M. Clurg	2-24-95
PRINT NAME: Dianne Mullan FIRM: Wacker Siltronic	TIME: 1135	PRINT NAME: Sara McClurg FIRM: NCA	TIME: 1135
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
PRINT NAME: FIRM:	TIME:	PRINT NAME: FIRM:	TIME:

ADDITIONAL REMARKS:

PAGE OF

COC Rev 6, 10/94

SCOEPA00019420

SAMPLES SENT TO OUTSIDE LABORATORY
FAB-2

1. WSC#: 95- 543

2. Date/Time of Sample: 2-24-95 / 0820

3. Name of Sampler: Dianne Mullan, Gary Kent

4. Sample Discription: Drop Box 24 ID# 910 202

   Other _____

5. Sent To: X North Creek Analytical
   (formerly Pacific Environmental Laboratory, Inc.)
   9405 SW Nimbus Avenue
   Beaverton, Oregon 97005
   643-9200

6. Analyses Required: BTEX 8020

7. Chain of Custody Submitted; (Yes) No

8. Purchase Order Number: 31002

9. Final Results Received On: _____

10. Additional Notes; _____

TJR 15 Nov 91
TJR 01 Nov 91
DEM 05 Jan 95

NORTH CREEK ANALYTICAL

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East 11115 Montgomery, Suite B • Spokane, WA 99206-4776 (509) 924-9200 • FAX 924-9290
9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

February 28, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

RE: JOB # BOXES
P.O.# 31002
PROJECT - FAB-2

Enclosed are test results for your samples received in this lab on Feb. 24, 1995. For your reference, these analyses have been assigned our NCA # P502275.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

This report will be accompanied by a separate Quality Control Data Report, unless omitted by client request.

Please call if you have any questions.

Respectfully,

Howard Holmes
Project Manager

NORTH CREEK ANALYTICAL

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BTEX per EPA 8020
Results In ug/kg (ppb)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P502275
Matrix: soil
Sampled: 02/24/1995
Received: 02/24/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-543-Box-24	P502275-1	Benzene	190	130	02/24/95	02/24/95
		Toluene	380	130		
		Ethylbenzene	360	130		
		Xylene (total)	1600	130		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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SURROGATE RECOVERIES (%)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P502275
Received: 02/24/1995

Sample Name	Analyte	Result	Control Limits
BTEX per EPA 8020			
95-543-Box-24	4-Bromofluorobenzene	104	63-126

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019424

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February 28, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

Re: Quality Control Data
JOB # BOXES
P.O.# 31002
PROJECT - FAB-2

NCA project number P502275.

Note: Surrogate Recoveries are included in the final report.

QUALITY CONTROL DEFINITIONS

METHOD BLANK RESULTS

The method blank is an analyte-free matrix which is carried through the same analytical process as the samples. It is used to document contamination that may result from the analytical process.

SURROGATE STANDARD

A surrogate standard (i.e., a chemical compound not expected to occur in an environmental sample) is added to each sample, blank, and matrix spike sample just prior to extraction or processing. The recovery of the surrogate standard is used to monitor for unusual matrix effects, gross sample processing errors, etc. Surrogate recovery is evaluated for acceptance by determining whether the measured concentration falls within accepted limits.

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Accuracy is measured by percent recovery as in:

$$\% \text{ Recovery} = \frac{\text{(Measured Concentration)}}{\text{(Actual Concentration)}} \times 100$$

Precision is measured using duplicate tests by relative percent difference.

$$\text{RPD} = \frac{\text{(Result of Test 1 - Result of Test 2)}}{\text{(Result of Test 1 + Result of Test 2)/2}} \times 100$$

If you should have any questions concerning this report, please contact me.

Sincerely,

Howard Holmes
Project Manager

SCOEPA00019426

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BATCH QUALITY CONTROL RESULTS
BTEX per EPA 8020

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P502275
Received: 02/24/1995

METHOD BLANK
Batch # BS95005d
Results In ug/kg (ppb)

Compound	Result	MRL
Benzene	ND	13
Toluene	ND	13
Ethylbenzene	ND	13
Xylene (total)	ND	13
Date Prepared	02/24/1995	
Date Analyzed	02/24/1995	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	108	63-126

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # BS95005a **Spike ID P502225-6**
Results In ug/kg (ppb)

Compound	Spike Added	Sample Conc	MS Conc	MS %Rec
Benzene	20	ND	13.6	68
Chlorobenzene	20	ND	15.1	76
Ethylbenzene	20	ND	16.0	80
Toluene	20	0.519	17.5	85
o-Xylene	20	ND	15.8	79

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
Benzene	20	14.5	73	7.1	17	56-123
Chlorobenzene	20	16.1	81	6.4	16	53-124
Ethylbenzene	20	17.0	85	6.1	20	45-130
Toluene	20	18.4	89	4.6	24	54-123
o-Xylene	20	16.6	83	4.9	20	50-127

SCOEPA00019427

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BATCH QUALITY CONTROL RESULTS
BTEX per EPA 8020

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P502275
Received: 02/24/1995

LABORATORY CONTROL SAMPLE
Batch # BS95005c
Results In ug/kg (ppb)

Compound	True	Found	% Rec	QC Limit % Rec
Benzene	20	17.8	89	69-138
Chlorobenzene	20	20.2	101	72-137
Ethylbenzene	20	20.8	104	61-141
Toluene	20	22.3	112	53-151
o-Xylene	20	20.6	103	62-144

SCOEPA00019428

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9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202

CHAIN OF CUSTODY REPORT

CLIENT: Wacker Siltronic

ADDRESS: 7200 N.W. Front Ave
Portland, OR

PHONE: 243-2020 x374 FAX: 241-7599

PROJECT NAME: FAB-2

PROJECT NUMBER: Boxes

SAMPLED BY: Dianne Mullan, Gary Kent

REPORT TO: Dianne Mullan

BILLING TO:

P.O. NUMBER: 31002

NCA QUOTE #:

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: 10 | 5 | 3 | 2 | 1

(Please Select One)

Fuels & Hydrocarbon Analyses: 5 | 3 | 2 | ~~1~~

* Turnaround Requests less than standard will incur Rush Charge.

FAX RESULTS BY :

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	Analysis Request: BTEX 8020	COMMENTS & PRESERVATIVES USED	NCA SAMPLE NUMBER
1. 95-540 - Box-5	2-24-95 1015	S	1	X		P502272
2. 95-541 - Box-6	2-24-95 0850	S	1	X	Allsamples field on ice	P502273
3. 95-542 - Box-23	2-24-95 0840	S	1	X		P502274
4. 95-543 - Box-24	2-24-95 0820	S	1	X		P502275
5. 95-544 - Box-25	2-24-95 0810	S	1	X		P502276
6. 95-545 - Box-26	2-24-95 0800	S	1	X		P502277
7.						
8.						
9.						
10.						

RELINQUISHED BY:	DATE: 2-24-95	RECEIVED BY: Sina McClary	DATE: 2-24-95
PRINT NAME: Dianne Mullan FIRM: Wacker Siltronic	TIME: 1135	PRINT NAME: Sina McClary FIRM: NCA	TIME: 1135
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
PRINT NAME: FIRM:	TIME:	PRINT NAME: FIRM:	TIME:

ADDITIONAL REMARKS:

PAGE OF

COC Rev 6, 10/94

SCOEPA00019429

SAMPLES SENT TO OUTSIDE LABORATORY
FAB-2

1. WSC#: 95- 530

2. Date/Time of Sample: 1-25-95 / 1200

3. Name of Sampler: Gary Kent, Dianne Mullen

4. Sample Discription: Drop Box 25 ID# 126

Other

5. Sent To: ✓ North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

6. Analyses Required: VOCLP-8240 TPH-D

7. Chain of Custody Submitted; Yes No

8. Purchase Order Number: 31002

9. Final Results Received On:

10. Additional Notes; BTEX analyses requested verbally on 02/06/95.

TJR 15 Nov 91
TJR 01 Nov 91
DEM 05 Jan 95

NORTH CREEK ANALYTICAL

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RECEIVED FEB 6 1995

January 30, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

RE: JOB # BOX'S
P.O.# 31002
PROJECT - FAB-2

Enclosed are test results for your samples received in this lab on Jan. 25, 1995. For your reference, these analyses have been assigned our NCA # P501262.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

Please call if you have any questions.

Respectfully,

Howard Holmes
Project Manager

NORTH CREEK ANALYTICAL

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TPH-D per Oregon DEQ
Results In mg/kg (ppm)

RECEIVED FEB 6 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501262
Matrix: soil
Sampled: 01/25/1995
Received: 01/25/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-530-BOX-25	P501262-1	Diesel/related	18,000	500	01/25/95	01/26/95
Method Blank		Diesel/related	ND	25		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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TCLP VOC's per EPA 8240

Results In mg/kg (ppm)

RECEIVED FEB 6 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501262
Matrix: soil
Sampled: 01/25/1995
Received: 01/25/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-530-BOX-25	P501262-1	Benzene	5.0	0.25	01/26/95	01/26/95
		Carbon Tetrachloride	ND	0.25		
		Chlorobenzene	ND	0.25		
		Chloroform	ND	0.25		
		1,4-Dichlorobenzene	ND	0.25		
		1,2-Dichloroethane	ND	0.25		
		1,1-Dichloroethene	ND	0.25		
		Methyl Ethyl Ketone	ND	0.94		
		Tetrachloroethene	ND	0.25		
		Trichloroethene	ND	0.25		
		Vinyl Chloride	ND	0.63		
Method Blank		Benzene	ND	0.25		
		Carbon Tetrachloride	ND	0.25		
		Chlorobenzene	ND	0.25		
		Chloroform	ND	0.25		
		1,4-Dichlorobenzene	ND	0.25		
		1,2-Dichloroethane	ND	0.25		
		1,1-Dichloroethene	ND	0.25		
		Methyl Ethyl Ketone	ND	0.94		
		Tetrachloroethene	ND	0.25		
		Trichloroethene	ND	0.25		
		Vinyl Chloride	ND	0.63		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

NORTH CREEK ANALYTICAL

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SURROGATE RECOVERIES (%)

RECEIVED FEB 6 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P501262
Received: 01/25/1995

Sample Name	Analyte	Result	Control Limits
TPH-D per Oregon DEQ			
95-530-BOX-25	1-Chlorooctadecane	– *[1]	50-150
TCLP VOC's per EPA 1311, 8240			
95-530-BOX-25	4-Bromofluorobenzene	91	74-121
	1,2-Dichloroethane-d4	83	70-121
	Toluene-d8	94	81-117

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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COMMENTS

RECEIVED FEB 6 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P501262
Received: 01/25/1995

1. Unable to calculate surrogate recovery due to matrix interference.

NORTH CREEK ANALYTICAL

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RECEIVED FEB 6 1995

January 30, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

Re: Requested Quality Control Data

Enclosed is the in-house quality control data you requested on NCA project number P501262.

Note: Method blank results and Surrogate Recoveries are included in the final report.

QUALITY CONTROL DEFINITIONS

METHOD BLANK RESULTS

A Method Blank is a laboratory-generated sample which assesses the degree to which laboratory operations and procedures cause false-positive analytical results for your sample.

No target parameters were detected in the method blank associated with your sample at the reporting limit levels noted on the data sheets in the final report.

SURROGATE STANDARD

A surrogate standard (i.e., a chemical compound not expected to occur in an environmental sample) is added to each sample, blank, and matrix spike sample just prior to extraction or processing. The recovery of the surrogate standard is used to monitor for unusual matrix effects, gross sample processing errors, etc. Surrogate recovery is evaluated for acceptance by determining whether the measured concentration falls within accepted limits.

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RECEIVED FEB 6 1995

Accuracy is measured by percent recovery as in:

$$\% \text{ Recovery} = \frac{\text{(Measured Concentration)}}{\text{(Actual Concentration)}} \times 100$$

Precision is measured using duplicate tests by relative percent difference.

$$\text{RPD} = \frac{\text{(Result of Test 1 - Result of Test 2)}}{\text{(Result of Test 1 + Result of Test 2)/2}} \times 100$$

If you should have any questions concerning this report, please contact me.

Sincerely,

Howard Holmes
Project Manager

NORTH CREEK ANALYTICAL

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BATCH QUALITY CONTROL RESULTS
TPH-D per Oregon DEQ

RECEIVED FEB 6 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501262
Received: 01/25/1995

METHOD BLANK
Batch # FC95002b
Results In mg/kg (ppm)

Compound	Result	MRL
Diesel/related	ND	25
Date Prepared	01/25/1995	
Date Analyzed	01/25/1995	

Surrogate Recovery (%)	Result	Control Limit
1-Chlorooctadecane	101	50-150

DUPLICATE
Batch # FC95002b **Duplicate ID P501265-1**
Results In mg/kg (ppm)

Compound	Sample Conc	Dup Conc	RPD	QC Limit RPD
Diesel/related	2,000	2,800	34	50

LABORATORY CONTROL SAMPLE
Batch # FC95002a
Results In mg/kg (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Diesel/related	120	120	100	50-150

SCOEPA00019438

NORTH CREEK ANALYTICAL

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

RECEIVED FEB 6 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501262
Received: 01/25/1995

METHOD BLANK
Batch # VE95003b
Results In mg/kg (ppm)

Compound	Result	MRL
Benzene	ND	0.25
Carbon Tetrachloride	ND	0.25
Chlorobenzene	ND	0.25
Chloroform	ND	0.25
1,4-Dichlorobenzene	ND	0.25
1,2-Dichloroethane	ND	0.25
1,1-Dichloroethene	ND	0.25
Methyl Ethyl Ketone	ND	0.94
Tetrachloroethene	ND	0.25
Trichloroethene	ND	0.25
Vinyl Chloride	ND	0.63
Date Prepared	01/26/1995	
Date Analyzed	01/26/1995	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	98	74-121
1,2-Dichloroethane-d4	86	70-121
Toluene-d8	98	81-117

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

RECEIVED FEB 6 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501262
Received: 01/25/1995

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # VE95003a **Spike ID P501226-1**
Results In mg/kg (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS %Rec
Benzene	2.50	ND	2.44	98
Chlorobenzene	2.50	ND	2.30	92
1,1-Dichloroethene	2.50	ND	2.43	97
Toluene	2.50	ND	2.48	99
Trichloroethene	2.50	ND	2.93	117

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
Benzene	2.50	2.56	102	4.0	21	66-142
Chlorobenzene	2.50	2.43	97	5.3	21	60-133
1,1-Dichloroethene	2.50	2.70	108	11	22	59-172
Toluene	2.50	2.64	106	6.8	21	59-139
Trichloroethene	2.50	2.46	98	18	24	62-137

SCOEPA00019440

NORTH CREEK ANALYTICAL

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9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202

CHAIN OF CUSTODY REPORT

RECEIVED FEB 6 1995

CLIENT: Wacker Siltronic
ADDRESS: 7200 N.W. Front Ave Portland, OR
PHONE: 243-2020 X-374 FAX:

REPORT TO: Dianne Mullan
BILLING TO:
P.O. NUMBER: 32001
NCA QUOTE #:

TURNAROUND REQUEST in Business Days *
Organic & Inorganic Analyses: 10 | 5 | 3 | 2 | 1
(Please Select One)
Fuels & Hydrocarbon Analyses: 5 | 3 | 2 | 1
* Turnaround Requests less than standard will incur Rush Charg
FAX RESULTS BY :

PROJECT NAME: FAB-2
PROJECT NUMBER: Box's
SAMPLED BY: Gary Kent, Dianne Mullan

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	TCLP 8240	TPH-D	COMMENTS & PRESERVATIVES USED	NCA SAMPLE NUMBER
1. 95-526 - Box 5	1-25-95/1050	S	1	X			P501258-1
2. 95-527 - Box 6	1115	S	1	X			P501259-1
3. 95-528 - Box-22	1130	S	2	X	X		P501260-1
4. 95-529 - Box-24	1145	S	2	X	X		P501261-1
5. 95-530 - Box-25	1200	S	2	X	X		P501262-1
6. 95-531 - Box-26	1245	S	2	X	X		P501263-1
7. 95-532 - Box-27	1300	S	2	X	X		P501264-1
8. 95-525 - Box-28	1040	S	2	X	X		P501265-1
9.							
10.							

Analysis Request:

Wheeler on ice

RELINQUISHED BY: Dianne Mullan DATE: 1-25-95
PRINT NAME: Dianne Mullan FIRM: Wacker Siltronic TIME: 1655

RECEIVED BY: Sara McCluig DATE: 1-25-95
PRINT NAME: Sara McCluig FIRM: NCA TIME: 1655

RELINQUISHED BY: DATE:
PRINT NAME: FIRM: TIME:

RECEIVED BY: DATE:
PRINT NAME: FIRM: TIME:

ADDITIONAL REMARKS:

PAGE OF

COC Rev 6, 10/94

SCOEPA00019441

NORTH CREEK ANALYTICAL

18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508 (206) 481-9200 FAX 485-2992
East 11115 Montgomery, Suite B, Spokane, WA 99206-4779 (509) 924-9200 FAX 924-9290
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202

CHAIN OF CUSTODY REPORT

CLIENT: Wacker Siltronic
ADDRESS: 7200 N.W. Front Ave
Portland, OR
PHONE: 243-2020 X-374 FAX:

REPORT TO: Dianne Mullan
BILLING TO:
P.O. NUMBER: 3R002
NCA QUOTE #:

TURNAROUND REQUEST in Business Days *
Organic & Inorganic Analyses: 10 | 5 | 3 | 2 | X
(Please Select One)
Fuels & Hydrocarbon Analyses: 5 | 3 | 2 | X
* Turnaround Requests less than standard will incur Rush Charges.
FAX RESULTS BY :

PROJECT NAME: FAB-2
PROJECT NUMBER: Box's
SAMPLED BY: Gary Kent Dianne Mullan

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	TCLP 8240	TCLP(8)	TPH-D	TCLP 8150	Flash Point 1010	pH-9040	TPH-G	TCLP 8270	TCLP-PEST	COMMENTS & PRESERVATIVES USED	NCA SAMPLE NUMBER
1. 95-526 - Box 5	1-25-95/1050	S	1	X		X								P501258-1
2. 95-527 - Box 6	1115	S	1	X		X								P501259-1
3. 95-528 - Box-22	1130	S	2	X		X								P501260-1
4. 95-529 - Box-24	1145	S	2	X	X	X	X	X	X	X	X	X		P501261-1
5. 95-530 - Box-25	1200	S	2	X		X								P501262-1
6. 95-531 - Box-26	1245	S	2	X		X								P501263-1
7. 95-532 - Box-27	1300	S	2	X		X								P501264-1
8. 95-525 - Box-28	1040	S	2	X		X								P501265-1
9.														
10.														

Called on 1/26

RELINQUISHED BY: Dianne Mullan DATE: 1-25-95
PRINT NAME: Dianne Mullan FIRM: Wacker Siltronic TIME: 1655
RECEIVED BY: Sara McClurg DATE: 1-25-95
PRINT NAME: Sara McClurg FIRM: NCA TIME: 1655

RELINQUISHED BY: DATE:
PRINT NAME: FIRM: TIME:
RECEIVED BY: DATE:
PRINT NAME: FIRM: TIME:

ADDITIONAL REMARKS:
additional analyses were added on #95-529-Box-24: TCLP(8) TCLP(8150) Flash Point (1010) pH (9040) TPH-G, TCLP (8270) TCLP (Pest)
(1) This sample was not included - pending it out on 1/26/95 DM

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SCOEPA00019442

NORTH CREEK ANALYTICAL

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9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202

CHAIN OF CUSTODY REPORT

CLIENT: Wacker Silitronic

ADDRESS: 7200 N.W. Front Ave
Portland, OR

PHONE: 243-2020 x374 FAX: 241-7599

REPORT TO: Dianne Mullan

BILLING TO:

P.O. NUMBER: 31002

NCA QUOTE #:

PROJECT NAME: FAB-2

PROJECT NUMBER: Boxes

SAMPLED BY: Dianne Mullan, Gary Kent

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: 10 | 5 | 3 | 2 | 1

(Please Select One)

Fuels & Hydrocarbon Analyses: 5 | 3 | 2 | ~~1~~

** Turnaround Requests less than standard will incur Rush Charges.*

FAX RESULTS BY :

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	BTEX 8020	COMMENTS & PRESERVATIVES USED	NCA SAMPLE NUMBER
1. 95-540 - Box-5	2-24-95 1015	S	1	X		P502272
2. 95-541 - Box-6	2-24-95 0850	S	1	X	Attempted to field on ice	P502273
3. 95-542 - Box-23	2-24-95 0840	S	1	X		P502274
4. 95-543 - Box-24	2-24-95 0820	S	1	X		P502275
5. 95-544 - Box-25	2-24-95 0810	S	1	X		P502276
6. 95-545 - Box-26	2-24-95 0800	S	1	X		P502277
7.						
8.						
9.						
10.						

RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
Dianne E Mullan	2-24-95	Sara Mc Clurg	2-24-95
PRINT NAME: Dianne Mullan FIRM: Wacker Siltronic	TIME: 1135	PRINT NAME: Sara McClurg FIRM: NCA	TIME: 1135
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
PRINT NAME: FIRM:	TIME:	PRINT NAME: FIRM:	TIME:

ADDITIONAL REMARKS:

PAGE OF

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SCOEPA00019443

NORTH CREEK ANALYTICAL

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RECEIVED FEB 1 0 1995

February 8, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

RE: JOB # BOX'S
P.O.# 31002
PROJECT - FAB-2

Enclosed are test results for your samples received in this lab on Jan. 25, 1995. For your reference, these analyses have been assigned our NCA # P502057.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

Please call if you have any questions.

Respectfully,

Howard Holmes
Project Manager

NORTH CREEK ANALYTICAL

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RECEIVED FEB 1 0 1995

BTEX per EPA 8020
Results In ug/kg (ppb)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P502057
Matrix: soil
Sampled: 01/25/1995
Received: 01/25/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-530-BOX-25	P502057-1	Benzene	230	50	02/06/95	02/07/95
		Ethylbenzene	1100	50		
		Toluene	200	50		
		Xylenes (total)	7000	50		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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SURROGATE RECOVERIES (%)

RECEIVED FEB 1 0 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P502057
Received: 01/25/1995

Sample Name	Analyte	Result	Control Limits
BTEX per EPA 8020			
95-530-BOX-25	4-Bromofluorobenzene	85	63-126

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019446

NORTH CREEK ANALYTICAL

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RECEIVED FEB 1 0 1995

February 8, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

Re: Quality Control Data

NCA project number P502057.

Note: Surrogate Recoveries are included in the final report.

QUALITY CONTROL DEFINITIONS

METHOD BLANK RESULTS

The method blank is an analyte-free matrix which is carried through the same analytical process as the samples. It is used to document contamination that may result from the analytical process.

SURROGATE STANDARD

A surrogate standard (i.e., a chemical compound not expected to occur in an environmental sample) is added to each sample, blank, and matrix spike sample just prior to extraction or processing. The recovery of the surrogate standard is used to monitor for unusual matrix effects, gross sample processing errors, etc. Surrogate recovery is evaluated for acceptance by determining whether the measured concentration falls within accepted limits.

NORTH CREEK ANALYTICAL

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RECEIVED FEB 1 0 1995

Accuracy is measured by percent recovery as in:

$$\% \text{ Recovery} = \frac{\text{(Measured Concentration)}}{\text{(Actual Concentration)}} \times 100$$

Precision is measured using duplicate tests by relative percent difference.

$$\text{RPD} = \frac{\text{(Result of Test 1 - Result of Test 2)}}{\text{(Result of Test 1 + Result of Test 2)/2}} \times 100$$

If you should have any questions concerning this report, please contact me.

Sincerely,

Howard Holmes
Project Manager

SCOEPA00019448

NORTH CREEK ANALYTICAL
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BATCH QUALITY CONTROL RESULTS
BTEX per EPA 8020

RECEIVED FEB 1 0 1995

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P502057
Received: 01/25/1995

METHOD BLANK
Batch # BS95003c
Results In ug/kg (ppb)

Compound	Result	MRL
Benzene	ND	13
Ethylbenzene	ND	13
Toluene	ND	13
Xylenes (total)	ND	13
Date Prepared	02/06/1995	
Date Analyzed	02/06/1995	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	103	63-126

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # BS95003a **Spike ID P501311-2**
Results In ug/kg (ppb)

Compound	Spike Added	Sample Conc	MS Conc	MS %Rec
Benzene	20	ND	17.2	86
Chlorobenzene	20	ND	17.4	87
Ethylbenzene	20	ND	17.2	86
Toluene	20	0.53	16.2	78
o-Xylene	20	0.61	18.4	89

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
Benzene	20	18.7	94	8.9	17	56-123
Chlorobenzene	20	18.2	91	4.5	16	53-124
Ethylbenzene	20	18.3	92	6.7	20	45-130
Toluene	20	18.2	88	13	24	54-123
o-Xylene	20	18.2	88	1.1	20	50-127

SCOEPA00019449

NORTH CREEK ANALYTICAL
(Formerly Pacific Environmental Laboratory, Inc.)
9405 S.W. Nimbus Ave. • Beaverton, OR 97005 • (503) 643-9200 • FAX # (503) 644-2202

REQUEST FOR ADDITIONAL TESTING

RECEIVED FEB 1 0 1995

DATE: 2-6-95

REQUESTED BY: Sara McClurg

CLIENT: Wacker Siltronics

CONTACT: Dianne Mullan and Chip Bloomer

JOB #: Fab-2

ORIGINAL NCA #: P501283, P501262, P501263

DUE DATE REQUESTED: 2-7-95 RUSH? _____ NO X YES

Adequate amount of sample remaining? _____ NO _____ YES

Updated chain of custody fax'd to us? _____ NO _____ YES

Samples re-numbered? _____ NO _____ YES

Rush! 1 day

NCA #	Sample ID	TEST(S)
P501283-1	95-533	BTEX
P501263-1	95-531-BOX-26	↓
P501262-1	95-530-BOX-25	

New NCA #: _____

NORTH CREEK ANALYTICAL

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

February 28, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

RE: JOB # BOXES
P.O.# 31002
PROJECT - FAB-2

Enclosed are test results for your samples received in this lab on Feb. 24, 1995. For your reference, these analyses have been assigned our NCA # P502276.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

This report will be accompanied by a separate Quality Control Data Report, unless omitted by client request.

Please call if you have any questions.

Respectfully,

Howard Holmes
Project Manager

NORTH CREEK ANALYTICAL

18939 120th Avenue N.E., Suite 101 • Bothell, WA 98011-9508 (206) 481-9200 • FAX 485-2992
East 11115 Montgomery, Suite B • Spokane, WA 99206-4776 (509) 924-9200 • FAX 924-9290
9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

BTEX per EPA 8020
Results In ug/kg (ppb)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P502276
Matrix: soil
Sampled: 02/24/1995
Received: 02/24/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-544-Box-25	P502276-1	Benzene	ND	50	02/24/95	02/24/95
		Toluene	ND	50		
		Ethylbenzene	66	50		
		Xylene (total)	270	50		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

NORTH CREEK ANALYTICAL

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

SURROGATE RECOVERIES (%)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P502276
Received: 02/24/1995

Sample Name	Analyte	Result	Control Limits
BTEX per EPA 8020			
95-544-Box-25	4-Bromofluorobenzene	96	63-126

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019453

NORTH CREEK ANALYTICAL

18939 120th Avenue N.E., Suite 101 • Bothell, WA 98011-9508 (206) 481-9200 • FAX 485-2992
East 11115 Montgomery, Suite B • Spokane, WA 99206-4776 (509) 924-9200 • FAX 924-9290
9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

February 28, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

Re: Quality Control Data
JOB # BOXES
P.O.# 31002
PROJECT - FAB-2

NCA project number P502276.

Note: Surrogate Recoveries are included in the final report.

QUALITY CONTROL DEFINITIONS

METHOD BLANK RESULTS

The method blank is an analyte-free matrix which is carried through the same analytical process as the samples. It is used to document contamination that may result from the analytical process.

SURROGATE STANDARD

A surrogate standard (i.e., a chemical compound not expected to occur in an environmental sample) is added to each sample, blank, and matrix spike sample just prior to extraction or processing. The recovery of the surrogate standard is used to monitor for unusual matrix effects, gross sample processing errors, etc. Surrogate recovery is evaluated for acceptance by determining whether the measured concentration falls within accepted limits.

NORTH CREEK ANALYTICAL

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

Accuracy is measured by percent recovery as in:

$$\% \text{ Recovery} = \frac{\text{(Measured Concentration)}}{\text{(Actual Concentration)}} \times 100$$

Precision is measured using duplicate tests by relative percent difference.

$$\text{RPD} = \frac{\text{(Result of Test 1 - Result of Test 2)}}{\text{(Result of Test 1 + Result of Test 2)/2}} \times 100$$

If you should have any questions concerning this report, please contact me.

Sincerely,

Howard Holmes
Project Manager

SCOEPA00019455

NORTH CREEK ANALYTICAL

18939 120th Avenue N.E., Suite 101 • Bothell, WA 98011-9508 (206) 481-9200 • FAX 485-2992
East 11115 Montgomery, Suite B • Spokane, WA 99206-4776 (509) 924-9200 • FAX 924-9290
9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

BATCH QUALITY CONTROL RESULTS
BTEX per EPA 8020

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P502276
Received: 02/24/1995

METHOD BLANK
Batch # BS95005d
Results In ug/kg (ppb)

Compound	Result	MRL
Benzene	ND	13
Toluene	ND	13
Ethylbenzene	ND	13
Xylene (total)	ND	13
Date Prepared	02/24/1995	
Date Analyzed	02/24/1995	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	108	63-126

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # BS95005a **Spike ID P502225-6**
Results In ug/kg (ppb)

Compound	Spike Added	Sample Conc	MS Conc	MS %Rec
Benzene	20	ND	13.6	68
Chlorobenzene	20	ND	15.1	76
Ethylbenzene	20	ND	16.0	80
Toluene	20	0.519	17.5	85
o-Xylene	20	ND	15.8	79

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
Benzene	20	14.5	73	7.1	17	56-123
Chlorobenzene	20	16.1	81	6.4	16	53-124
Ethylbenzene	20	17.0	85	6.1	20	45-130
Toluene	20	18.4	89	4.6	24	54-123
o-Xylene	20	16.6	83	4.9	20	50-127

SCOEPA00019456

NORTH CREEK ANALYTICAL
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East 11115 Montgomery, Suite B • Spokane, WA 99206-4776 (509) 924-9200 • FAX 924-9290
9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

BATCH QUALITY CONTROL RESULTS
BTEX per EPA 8020

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P502276
Received: 02/24/1995

LABORATORY CONTROL SAMPLE
Batch # BS95005c
Results In ug/kg (ppb)

Compound	True	Found	% Rec	QC Limit % Rec
Benzene	20	17.8	89	69-138
Chlorobenzene	20	20.2	101	72-137
Ethylbenzene	20	20.8	104	61-141
Toluene	20	22.3	112	53-151
o-Xylene	20	20.6	103	62-144

SCOEPA00019457

NORTH CREEK ANALYTICAL

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East 11115 Montgomery, Suite B, Spokane, WA 99206-4779 (509) 924-9200 FAX 924-9290
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202

CHAIN OF CUSTODY REPORT

CLIENT: Wacker Siltronic

ADDRESS: 7200 N.W. Front Ave
Portland, OR

PHONE: 243-2020 x374 FAX: 241-7599

REPORT TO: Dianne Mullan

BILLING TO:

P.O. NUMBER: 31002

NCA QUOTE #:

PROJECT NAME: FAB-2

PROJECT NUMBER: Boxes

SAMPLED BY: Dianne Mullan, Gary Kent

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: 10 | 5 | 3 | 2 | 1

(Please Select One)

Fuels & Hydrocarbon Analyses: 5 | 3 | 2 | X

* Turnaround Requests less than standard will incur Rush Charge.

FAX RESULTS BY :

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	Analysis Request: BTEX 8020	COMMENTS & PRESERVATIVES USED	NCA SAMPLE NUMBER
1. 95-540 - Box-5	2-24-95 1015	S	1	X		P502272
2. 95-541 - Box-6	2-24-95 0850	S	1	X	Attempts to hold on ice	P502273
3. 95-542 - Box-23	2-24-95 0840	S	1	X		P502274
4. 95-543 - Box-24	2-24-95 0820	S	1	X		P502275
5. 95-544 - Box-25	2-24-95 0810	S	1	X		P502276
6. 95-545 - Box-26	2-24-95 0800	S	1	X		P502277
7.						
8.						
9.						
10.						

RELINQUISHED BY:	DATE: 2-24-95	RECEIVED BY: Sara McClary	DATE: 2-24-95
PRINT NAME: Dianne Mullan FIRM: Wacker Siltronic	TIME: 1135	PRINT NAME: Sara McClary FIRM: NCA	TIME: 1135
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
PRINT NAME: FIRM:	TIME:	PRINT NAME: FIRM:	TIME:

ADDITIONAL REMARKS:

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SCOEPA00019458

SURROGATE RECOVERIES (%)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P502276
Received: 02/24/1995

Sample Name	Analyte	Result	Control Limits
BTEX per EPA 8020			
95-544-Box-25	4-Bromofluorobenzene	96	63-126

PRELIMINARY REPORT
This report has not yet been reviewed by the NCA Quality Control Dept. Results are subject to final review.

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

622-2

SAMPLES SENT TO OUTSIDE LABORATORY
FAB-2

1. WSC#: 95- 531

2. Date/Time of Sample: 1-25-95 / 1245

3. Name of Sampler: Gary Kent, Deanna Mullan

4. Sample Discription: Drop Box 26 ID# 159

Other

5. Sent To: X North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

6. Analyses Required: VCLP-8240 TPH-D

7. Chain of Custody Submitted; Yes No

8. Purchase Order Number: 31002

9. Final Results Received On:

10. Additional Notes; 02-06-95 phoned in request for BTEX test.

TJR 15 Nov 91
TJR 01 Nov 91
DEM 05 Jan 95

NORTH CREEK ANALYTICAL

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January 30, 1995

RECEIVED FEB 6 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

RE: JOB # BOX'S
P.O.# 31002
PROJECT - FAB-2

Enclosed are test results for your samples received in this lab on Jan. 25, 1995. For your reference, these analyses have been assigned our NCA # P501263.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

Please call if you have any questions.

Respectfully,

Howard Holmes
Project Manager

NORTH CREEK ANALYTICAL

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TPH-D per Oregon DEQ

Results In mg/kg (ppm)

RECEIVED FEB 6 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501263
Matrix: soil
Sampled: 01/25/1995
Received: 01/25/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-531-BOX-26	P501263-1	Diesel/related	15,000	500	01/25/95	01/26/95
Method Blank		Diesel/related	ND	25		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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TCLP VOC's per EPA 8240

Results In mg/kg (ppm)

RECEIVED FEB 0 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501263
Matrix: soil
Sampled: 01/25/1995
Received: 01/25/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-531-BOX-26	P501263-1	Benzene	2.7	0.25	01/26/95	01/26/95
		Carbon Tetrachloride	ND	0.25		
		Chlorobenzene	ND	0.25		
		Chloroform	ND	0.25		
		1,4-Dichlorobenzene	ND	0.25		
		1,2-Dichloroethane	ND	0.25		
		1,1-Dichloroethene	ND	0.25		
		Methyl Ethyl Ketone	ND	0.94		
		Tetrachloroethene	ND	0.25		
		Trichloroethene	ND	0.25		
		Vinyl Chloride	ND	0.63		
Method Blank		Benzene	ND	0.25		
		Carbon Tetrachloride	ND	0.25		
		Chlorobenzene	ND	0.25		
		Chloroform	ND	0.25		
		1,4-Dichlorobenzene	ND	0.25		
		1,2-Dichloroethane	ND	0.25		
		1,1-Dichloroethene	ND	0.25		
		Methyl Ethyl Ketone	ND	0.94		
		Tetrachloroethene	ND	0.25		
		Trichloroethene	ND	0.25		
		Vinyl Chloride	ND	0.63		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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SURROGATE RECOVERIES (%)

RECEIVED FEB 6 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P501263
Received: 01/25/1995

Sample Name	Analyte	Result	Control Limits
TPH-D per Oregon DEQ			
95-531-BOX-26	1-Chlorooctadecane	– *[1]	50-150
TCLP VOC's per EPA 1311, 8240			
95-531-BOX-26	4-Bromofluorobenzene	91	74-121
	1,2-Dichloroethane-d4	82	70-121
	Toluene-d8	93	81-117

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019464

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COMMENTS

RECEIVED FEB 6 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P501263
Received: 01/25/1995

1. Unable to calculate surrogate recovery due to matrix interference.

SCOEPA00019465

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January 30, 1995

RECEIVED FEB 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

Re: Requested Quality Control Data

Enclosed is the in-house quality control data you requested on NCA project number P501263.

Note: Method blank results and Surrogate Recoveries are included in the final report.

QUALITY CONTROL DEFINITIONS

METHOD BLANK RESULTS

A Method Blank is a laboratory-generated sample which assesses the degree to which laboratory operations and procedures cause false-positive analytical results for your sample.

No target parameters were detected in the method blank associated with your sample at the reporting limit levels noted on the data sheets in the final report.

SURROGATE STANDARD

A surrogate standard (i.e., a chemical compound not expected to occur in an environmental sample) is added to each sample, blank, and matrix spike sample just prior to extraction or processing. The recovery of the surrogate standard is used to monitor for unusual matrix effects, gross sample processing errors, etc. Surrogate recovery is evaluated for acceptance by determining whether the measured concentration falls within accepted limits.

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RECEIVED FEB 6 1995

Accuracy is measured by percent recovery as in:

$$\% \text{ Recovery} = \frac{\text{(Measured Concentration)}}{\text{(Actual Concentration)}} \times 100$$

Precision is measured using duplicate tests by relative percent difference.

$$\text{RPD} = \frac{\text{(Result of Test 1 - Result of Test 2)}}{\text{(Result of Test 1 + Result of Test 2)/2}} \times 100$$

If you should have any questions concerning this report, please contact me.

Sincerely,

Howard Holmes
Project Manager

NORTH CREEK ANALYTICAL

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BATCH QUALITY CONTROL RESULTS
TPH-D per Oregon DEQ

RECEIVED FEB 6 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501263
Received: 01/25/1995

METHOD BLANK
Batch # FC95002b
Results In mg/kg (ppm)

Compound	Result	MRL
Diesel/related	ND	25
Date Prepared	01/25/1995	
Date Analyzed	01/25/1995	

Surrogate Recovery (%)	Result	Control Limit
1-Chlorooctadecane	101	50-150

DUPLICATE
Batch # FC95002b
Results In mg/kg (ppm)

Duplicate ID P501265-1

Compound	Sample Conc	Dup Conc	RPD	QC Limit RPD
Diesel/related	2,000	2,800	34	50

LABORATORY CONTROL SAMPLE
Batch # FC95002a
Results In mg/kg (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Diesel/related	120	120	100	50-150

SCOEPA00019468

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

RECEIVED FEB 6 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501263
Received: 01/25/1995

METHOD BLANK
Batch # VE95003b
Results In mg/kg (ppm)

Compound	Result	MRL
Benzene	ND	0.25
Carbon Tetrachloride	ND	0.25
Chlorobenzene	ND	0.25
Chloroform	ND	0.25
1,4-Dichlorobenzene	ND	0.25
1,2-Dichloroethane	ND	0.25
1,1-Dichloroethene	ND	0.25
Methyl Ethyl Ketone	ND	0.94
Tetrachloroethene	ND	0.25
Trichloroethene	ND	0.25
Vinyl Chloride	ND	0.63
Date Prepared	01/26/1995	
Date Analyzed	01/26/1995	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	98	74-121
1,2-Dichloroethane-d4	86	70-121
Toluene-d8	98	81-117

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

RECEIVED FEB 6 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501263
Received: 01/25/1995

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # VE95003a **Spike ID P501226-1**
Results In mg/kg (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS %Rec
Benzene	2.50	ND	2.44	98
Chlorobenzene	2.50	ND	2.30	92
1,1-Dichloroethene	2.50	ND	2.43	97
Toluene	2.50	ND	2.48	99
Trichloroethene	2.50	ND	2.93	117

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
Benzene	2.50	2.56	102	4.0	21	66-142
Chlorobenzene	2.50	2.43	97	5.3	21	60-133
1,1-Dichloroethene	2.50	2.70	108	11	22	59-172
Toluene	2.50	2.64	106	6.8	21	59-139
Trichloroethene	2.50	2.46	98	18	24	62-137

SCOEPA00019470

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CHAIN OF CUSTODY REPORT

RECEIVED FEB 6 1995

CLIENT: Wacker Siltronic
ADDRESS: 7200 N.W. Front Ave
Portland, OR
PHONE: 243-2020 X-374 FAX:

REPORT TO: Dianne Mullan
BILLING TO:
P.O. NUMBER: 32001
NCA QUOTE #:

TURNAROUND REQUEST in Business Days *
Organic & Inorganic Analyses: 10 | 5 | 3 | 2 | 1
(Please Select One)
Fuels & Hydrocarbon Analyses: 5 | 3 | 2 | 1
* Turnaround Requests less than standard will incur Rush Charg
FAX RESULTS BY :

PROJECT NAME: FAB-2
PROJECT NUMBER: Box's
SAMPLED BY: Gary Kent, Dianne Mullan

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	TCLP 8240	TPH-D	COMMENTS & PRESERVATIVES USED	NCA SAMPLE NUMBER
1. 95-526 - Box 5	1-25-95/1050	S	1	X			P501258-1
2. 95-527 - Box 6	1115	S	1	X			P501259-1
3. 95-528 - Box-22	1130	S	2	X	X		P501260-1
4. 95-529 - Box-24	1145	S	2	X	X		P501261-1
5. 95-530 - Box-25	1200	S	2	X	X		P501262-1
6. 95-531 - Box-26	1245	S	2	X	X		P501263-1
7. 95-532 - Box-27	1300	S	2	X	X		P501264-1
8. 95-525 - Box-28	1040	S	2	X	X		P501265-1
9.							
10.							

Analysis Request: TCLP 8240; TPH-D

Wheldon on ice

RELINQUISHED BY: Dianne Mullan DATE: 1-25-95
PRINT NAME: Dianne Mullan FIRM: Wacker Siltronic TIME: 1655

RECEIVED BY: Sara McClurg DATE: 1-25-95
PRINT NAME: Sara McClurg FIRM: NCA TIME: 1655

RELINQUISHED BY: DATE:
PRINT NAME: FIRM: TIME:

RECEIVED BY: DATE:
PRINT NAME: FIRM: TIME:

ADDITIONAL REMARKS:

PAGE OF

COC Rev 6, 10/94

SCOEPA00019471

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February 8, 1995

RECEIVED FEB 1 0 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

RE: JOB # BOX'S
P.O.# 31002
PROJECT - FAB-2

Enclosed are test results for your samples received in this lab on Jan. 25, 1995. For your reference, these analyses have been assigned our NCA # P502058.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

Please call if you have any questions.

Respectfully,

Howard Holmes
Project Manager

NORTH CREEK ANALYTICAL

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BTEX per EPA 8020
Results In ug/kg (ppb)

RECEIVED FEB 1 0 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P502058
Matrix: soil
Sampled: 01/25/1995
Received: 01/25/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-531-BOX-26	P502058-1	Benzene	310	50	02/06/95	02/07/95
		Ethylbenzene	910	50		
		Toluene	490	50		
		Xylenes (total)	5200	50		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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SURROGATE RECOVERIES (%)

RECEIVED FEB 1 0 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P502058
Received: 01/25/1995

Sample Name	Analyte	Result	Control Limits
BTEX per EPA 8020			
95-531-BOX-26	4-Bromofluorobenzene	89	63-126

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019474

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RECEIVED FEB 1 0 1995

February 8, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

Re: Quality Control Data

NCA project number P502058.

Note: Surrogate Recoveries are included in the final report.

QUALITY CONTROL DEFINITIONS

METHOD BLANK RESULTS

The method blank is an analyte-free matrix which is carried through the same analytical process as the samples. It is used to document contamination that may result from the analytical process.

SURROGATE STANDARD

A surrogate standard (i.e., a chemical compound not expected to occur in an environmental sample) is added to each sample, blank, and matrix spike sample just prior to extraction or processing. The recovery of the surrogate standard is used to monitor for unusual matrix effects, gross sample processing errors, etc. Surrogate recovery is evaluated for acceptance by determining whether the measured concentration falls within accepted limits.

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RECEIVED FEB 1 0 1995

Accuracy is measured by percent recovery as in:

$$\% \text{ Recovery} = \frac{\text{(Measured Concentration)}}{\text{(Actual Concentration)}} \times 100$$

Precision is measured using duplicate tests by relative percent difference.

$$\text{RPD} = \frac{\text{(Result of Test 1 - Result of Test 2)}}{\text{(Result of Test 1 + Result of Test 2)/2}} \times 100$$

If you should have any questions concerning this report, please contact me.

Sincerely,

Howard Holmes
Project Manager

SCOEPA00019476

NORTH CREEK ANALYTICAL
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BATCH QUALITY CONTROL RESULTS
BTEX per EPA 8020

RECEIVED FEB 1 0 1995

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P502058
Received: 01/25/1995

METHOD BLANK
Batch # BS95003c
Results In ug/kg (ppb)

Compound	Result	MRL
Benzene	ND	13
Ethylbenzene	ND	13
Toluene	ND	13
Xylenes (total)	ND	13
Date Prepared	02/06/1995	
Date Analyzed	02/06/1995	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	103	63-126

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # BS95003a **Spike ID P501311-2**
Results In ug/kg (ppb)

Compound	Spike Added	Sample Conc	MS Conc	MS %Rec
Benzene	20	ND	17.2	86
Chlorobenzene	20	ND	17.4	87
Ethylbenzene	20	ND	17.2	86
Toluene	20	0.53	16.2	78
o-Xylene	20	0.61	18.4	89

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
Benzene	20	18.7	94	8.9	17	56-123
Chlorobenzene	20	18.2	91	4.5	16	53-124
Ethylbenzene	20	18.3	92	6.7	20	45-130
Toluene	20	18.2	88	13	24	54-123
o-Xylene	20	18.2	88	1.1	20	50-127

SCOEPA00019477

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February 28, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

RE: JOB # BOXES
P.O.# 31002
PROJECT - FAB-2

Enclosed are test results for your samples received in this lab on Feb. 24, 1995. For your reference, these analyses have been assigned our NCA # P502277.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

This report will be accompanied by a separate Quality Control Data Report, unless omitted by client request.

Please call if you have any questions.

Respectfully,

Howard Holmes
Project Manager

NORTH CREEK ANALYTICAL

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BTEX per EPA 8020
Results In ug/kg (ppb)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P502277
Matrix: soil
Sampled: 02/24/1995
Received: 02/24/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-545-Box-26	P502277-1	Benzene	78	50	02/24/95	02/24/95
		Toluene	220	50		
		Ethylbenzene	700	50		
		Xylene (total)	3100	50		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019479

NORTH CREEK ANALYTICAL

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SURROGATE RECOVERIES (%)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P502277
Received: 02/24/1995

Sample Name	Analyte	Result	Control Limits
BTEX per EPA 8020			
95-545-Box-26	4-Bromofluorobenzene	86	63-126

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

NORTH CREEK ANALYTICAL

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February 28, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

Re: Quality Control Data
JOB # BOXES
P.O.# 31002
PROJECT - FAB-2

NCA project number P502277.

Note: Surrogate Recoveries are included in the final report.

QUALITY CONTROL DEFINITIONS

METHOD BLANK RESULTS

The method blank is an analyte-free matrix which is carried through the same analytical process as the samples. It is used to document contamination that may result from the analytical process.

SURROGATE STANDARD

A surrogate standard (i.e., a chemical compound not expected to occur in an environmental sample) is added to each sample, blank, and matrix spike sample just prior to extraction or processing. The recovery of the surrogate standard is used to monitor for unusual matrix effects, gross sample processing errors, etc. Surrogate recovery is evaluated for acceptance by determining whether the measured concentration falls within accepted limits.

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

Accuracy is measured by percent recovery as in:

$$\% \text{ Recovery} = \frac{\text{(Measured Concentration)}}{\text{(Actual Concentration)}} \times 100$$

Precision is measured using duplicate tests by relative percent difference.

$$\text{RPD} = \frac{\text{(Result of Test 1 - Result of Test 2)}}{\text{(Result of Test 1 + Result of Test 2)/2}} \times 100$$

If you should have any questions concerning this report, please contact me.

Sincerely,

Howard Holmes
Project Manager

SCOEPA00019482

NORTH CREEK ANALYTICAL
18939 120th Avenue N.E., Suite 101 • Bothell, WA 98011-9508 (206) 481-9200 • FAX 485-2992
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BATCH QUALITY CONTROL RESULTS
BTEX per EPA 8020

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P502277
Received: 02/24/1995

METHOD BLANK
Batch # BS95005d
Results In ug/kg (ppb)

Compound	Result	MRL
Benzene	ND	13
Toluene	ND	13
Ethylbenzene	ND	13
Xylene (total)	ND	13
Date Prepared	02/24/1995	
Date Analyzed	02/24/1995	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	108	63-126

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # BS95005a **Spike ID P502225-6**
Results In ug/kg (ppb)

Compound	Spike Added	Sample Conc	MS Conc	MS %Rec
Benzene	20	ND	13.6	68
Chlorobenzene	20	ND	15.1	76
Ethylbenzene	20	ND	16.0	80
Toluene	20	0.519	17.5	85
o-Xylene	20	ND	15.8	79

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
Benzene	20	14.5	73	7.1	17	56-123
Chlorobenzene	20	16.1	81	6.4	16	53-124
Ethylbenzene	20	17.0	85	6.1	20	45-130
Toluene	20	18.4	89	4.6	24	54-123
o-Xylene	20	16.6	83	4.9	20	50-127

SCOEPA00019483

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

BATCH QUALITY CONTROL RESULTS
BTEX per EPA 8020

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P502277
Received: 02/24/1995

LABORATORY CONTROL SAMPLE
Batch # BS95005c
Results In ug/kg (ppb)

Compound	True	Found	% Rec	QC Limit % Rec
Benzene	20	17.8	89	69-138
Chlorobenzene	20	20.2	101	72-137
Ethylbenzene	20	20.8	104	61-141
Toluene	20	22.3	112	53-151
o-Xylene	20	20.6	103	62-144

SCOEPA00019484

SAMPLES SENT TO OUTSIDE LABORATORY
FAB-2

1. WSC#: 95- 532

2. Date/Time of Sample: 1-25-95 / 1300

3. Name of Sampler: Gary Kent, Dianne Mullan

4. Sample Discription: Drop Box 27 ID# 124

Other _____

5. Sent To: X North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

6. Analyses Required: TCLP-8240, TPH-D

7. Chain of Custody Submitted; (Yes) No

8. Purchase Order Number: 31002

9. Final Results Received On: _____

10. Additional Notes; _____

TJR 15 Nov 91
TJR 01 Nov 91
DEM 05 Jan 95

NORTH CREEK ANALYTICAL

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RECEIVED FEB 6 1995

January 30, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

RE: JOB # BOX'S
P.O.# 31002
PROJECT - FAB-2

Enclosed are test results for your samples received in this lab on Jan. 25, 1995. For your reference, these analyses have been assigned our NCA # P501264.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

Please call if you have any questions.

Respectfully,

Howard Holmes
Project Manager

NORTH CREEK ANALYTICAL

18939 120th Avenue N.E., Suite 101 • Bothell, WA 98011-9508 (206) 481-9200 • FAX 485-2992
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TPH-D per Oregon DEQ
Results In mg/kg (ppm)

RECEIVED FEB 6 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501264
Matrix: soil
Sampled: 01/25/1995
Received: 01/25/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-532-BOX-27	P501264-1	Diesel/related	3,000	100	01/25/95	01/25/95
Method Blank		Diesel/related	ND	25		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

NORTH CREEK ANALYTICAL
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TCLP VOC's per EPA 8240

Results In mg/kg (ppm)

RECEIVED FEB 6 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501264
Matrix: soil
Sampled: 01/25/1995
Received: 01/25/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-532-BOX-27	P501264-1	Benzene	0.11	0.010	01/26/95	01/26/95
		Carbon Tetrachloride	ND	0.010		
		Chlorobenzene	ND	0.010		
		Chloroform	ND	0.010		
		1,4-Dichlorobenzene	ND	0.010		
		1,2-Dichloroethane	ND	0.010		
		1,1-Dichloroethene	ND	0.010		
		Methyl Ethyl Ketone	ND	0.038		
		Tetrachloroethene	ND	0.010		
		Trichloroethene	ND	0.010		
		Vinyl Chloride	ND	0.025		
Method Blank		Benzene	ND	0.0020		
		Carbon Tetrachloride	ND	0.0020		
		Chlorobenzene	ND	0.0020		
		Chloroform	ND	0.0020		
		1,4-Dichlorobenzene	ND	0.0020		
		1,2-Dichloroethane	ND	0.0020		
		1,1-Dichloroethene	ND	0.0020		
		Methyl Ethyl Ketone	ND	0.0075		
		Tetrachloroethene	ND	0.0020		
		Trichloroethene	ND	0.0020		
		Vinyl Chloride	ND	0.0050		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019488

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SURROGATE RECOVERIES (%)

RECEIVED FEB 6 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P501264
Received: 01/25/1995

Sample Name	Analyte	Result	Control Limits
TPH-D per Oregon DEQ			
95-532-BOX-27	1-Chlorooctadecane	– *[1]	50-150
TCLP VOC's per EPA 1311, 8240			
95-532-BOX-27	4-Bromofluorobenzene	99	74-121
	1,2-Dichloroethane-d4	104	70-121
	Toluene-d8	95	81-117

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019489

NORTH CREEK ANALYTICAL

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COMMENTS

RECEIVED FEB 6 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P501264
Received: 01/25/1995

1. Unable to calculate surrogate recovery due to matrix interference.

SCOEPA00019490

NORTH CREEK ANALYTICAL

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RECEIVED FEB 6 1995

January 30, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

Re: Requested Quality Control Data

Enclosed is the in-house quality control data you requested on NCA project number P501264.

Note: Method blank results and Surrogate Recoveries are included in the final report.

QUALITY CONTROL DEFINITIONS

METHOD BLANK RESULTS

A Method Blank is a laboratory-generated sample which assesses the degree to which laboratory operations and procedures cause false-positive analytical results for your sample.

No target parameters were detected in the method blank associated with your sample at the reporting limit levels noted on the data sheets in the final report.

SURROGATE STANDARD

A surrogate standard (i.e., a chemical compound not expected to occur in an environmental sample) is added to each sample, blank, and matrix spike sample just prior to extraction or processing. The recovery of the surrogate standard is used to monitor for unusual matrix effects, gross sample processing errors, etc. Surrogate recovery is evaluated for acceptance by determining whether the measured concentration falls within accepted limits.

NORTH CREEK ANALYTICAL

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RECEIVED FEB 6 1995

Accuracy is measured by percent recovery as in:

$$\% \text{ Recovery} = \frac{\text{(Measured Concentration)}}{\text{(Actual Concentration)}} \times 100$$

Precision is measured using duplicate tests by relative percent difference.

$$\text{RPD} = \frac{\text{(Result of Test 1 - Result of Test 2)}}{\text{(Result of Test 1 + Result of Test 2)/2}} \times 100$$

If you should have any questions concerning this report, please contact me.

Sincerely,

Howard Holmes
Project Manager

NORTH CREEK ANALYTICAL

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BATCH QUALITY CONTROL RESULTS
TPH-D per Oregon DEQ

RECEIVED FEB 6 1995

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P501264
Received: 01/25/1995

METHOD BLANK
Batch # FC95002b
Results In mg/kg (ppm)

Compound	Result	MRL
Diesel/related	ND	25
Date Prepared	01/25/1995	
Date Analyzed	01/25/1995	

Surrogate Recovery (%)	Result	Control Limit
1-Chlorooctadecane	101	50-150

DUPLICATE
Batch # FC95002b **Duplicate ID P501265-1**
Results In mg/kg (ppm)

Compound	Sample Conc	Dup Conc	RPD	QC Limit RPD
Diesel/related	2,000	2,800	34	50

LABORATORY CONTROL SAMPLE
Batch # FC95002a
Results In mg/kg (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Diesel/related	120	120	100	50-150

SCOEPA00019493

NORTH CREEK ANALYTICAL

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

RECEIVED FEB 6 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501264
Received: 01/25/1995

METHOD BLANK
Batch # VS95004b
Results In mg/kg (ppm)

Compound	Result	MRL
Benzene	ND	0.0020
Carbon Tetrachloride	ND	0.0020
Chlorobenzene	ND	0.0020
Chloroform	ND	0.0020
1,4-Dichlorobenzene	ND	0.0020
1,2-Dichloroethane	ND	0.0020
1,1-Dichloroethene	ND	0.0020
Methyl Ethyl Ketone	ND	0.0075
Tetrachloroethene	ND	0.0020
Trichloroethene	ND	0.0020
Vinyl Chloride	ND	0.0050
Date Prepared	01/26/1995	
Date Analyzed	01/26/1995	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	103	74-121
1,2-Dichloroethane-d4	104	70-121
Toluene-d8	99	81-117

SCOEPA00019494

NORTH CREEK ANALYTICAL

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

RECEIVED FEB 6 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501264
Received: 01/25/1995

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # VS95004a **Spike ID P501226-1**
Results In mg/kg (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS %Rec
Benzene	0.020	ND	0.0212	106
Chlorobenzene	0.020	ND	0.0196	98
1,1-Dichloroethene	0.020	ND	0.0246	123
Toluene	0.020	ND	0.0218	109
Trichloroethene	0.020	ND	0.0211	106

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
Benzene	0.020	0.0214	107	0.94	21	66-142
Chlorobenzene	0.020	0.0203	102	4.0	21	60-133
1,1-Dichloroethene	0.020	0.0244	122	0.82	22	59-172
Toluene	0.020	0.0217	109	0	21	59-139
Trichloroethene	0.020	0.0213	107	0.94	24	62-137

SCOEPA00019495

SAMPLES SENT TO OUTSIDE LABORATORY
FAB-2

1. WSC#: 95- 525

2. Date/Time of Sample: 1-25-95 / 1040

3. Name of Sampler: Dianne Mullen, Gary Kent

4. Sample Discription: Drop Box 28 ID# 129

Other _____

5. Sent To: ✓ North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

6. Analyses Required: VOCLP 8240 TPH-D

7. Chain of Custody Submitted: Yes No

8. Purchase Order Number: 31002

9. Final Results Received On: _____

10. Additional Notes; _____

TJR 15 Nov 91
TJR 01 Nov 91
DEM 05 Jan 95

NORTH CREEK ANALYTICAL

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

January 30, 1995

RECEIVED FEB 6 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

RE: JOB # BOX'S
P.O.# 31002
PROJECT - FAB-2

Enclosed are test results for your samples received in this lab on Jan. 25, 1995. For your reference, these analyses have been assigned our NCA # P501265.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

Please call if you have any questions.

Respectfully,

Howard Holmes
Project Manager

NORTH CREEK ANALYTICAL

18939 120th Avenue N.E., Suite 101 • Bothell, WA 98011-9508 (206) 481-9200 • FAX 485-2992
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TPH-D per Oregon DEQ
Results In mg/kg (ppm)

RECEIVED FEB 6 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501265
Matrix: soil
Sampled: 01/25/1995
Received: 01/25/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-525-BOX-28	P501265-1	Diesel/related	2,000	130	01/25/95	01/25/95
Method Blank		Diesel/related	ND	25		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019498

NORTH CREEK ANALYTICAL
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TCLP VOC's per EPA 8240
Results in mg/kg (ppm)

RECEIVED FEB 6 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501265
Matrix: soil
Sampled: 01/25/1995
Received: 01/25/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-525-BOX-28	P501265-1	Benzene	0.018	0.010	01/26/95	01/26/95
		Carbon Tetrachloride	ND	0.010		
		Chlorobenzene	ND	0.010		
		Chloroform	ND	0.010		
		1,4-Dichlorobenzene	ND	0.010		
		1,2-Dichloroethane	ND	0.010		
		1,1-Dichloroethene	ND	0.010		
		Methyl Ethyl Ketone	ND	0.038		
		Tetrachloroethene	ND	0.010		
		Trichloroethene	ND	0.010		
		Vinyl Chloride	ND	0.025		
Method Blank		Benzene	ND	0.0020		
		Carbon Tetrachloride	ND	0.0020		
		Chlorobenzene	ND	0.0020		
		Chloroform	ND	0.0020		
		1,4-Dichlorobenzene	ND	0.0020		
		1,2-Dichloroethane	ND	0.0020		
		1,1-Dichloroethene	ND	0.0020		
		Methyl Ethyl Ketone	ND	0.0075		
		Tetrachloroethene	ND	0.0020		
		Trichloroethene	ND	0.0020		
		Vinyl Chloride	ND	0.0050		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019499

NORTH CREEK ANALYTICAL

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

SURROGATE RECOVERIES (%)

RECEIVED FEB 6 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P501265
Received: 01/25/1995

Sample Name	Analyte	Result	Control Limits
TPH-D per Oregon DEQ			
95-525-BOX-28	1-Chlorooctadecane	-- *[1]	50-150
TCLP VOC's per EPA 1311, 8240			
95-525-BOX-28	4-Bromofluorobenzene	105	74-121
	1,2-Dichloroethane-d4	102	70-121
	Toluene-d8	98	81-117

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019500

NORTH CREEK ANALYTICAL

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COMMENTS

RECEIVED FEB 6 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P501265
Received: 01/25/1995

1. Unable to calculate surrogate recovery due to matrix interference.

NORTH CREEK ANALYTICAL

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

RECEIVED FEB 6 1995

January 30, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

Re: Requested Quality Control Data

Enclosed is the in-house quality control data you requested on NCA project number P501265.

Note: Method blank results and Surrogate Recoveries are included in the final report.

QUALITY CONTROL DEFINITIONS

METHOD BLANK RESULTS

A Method Blank is a laboratory-generated sample which assesses the degree to which laboratory operations and procedures cause false-positive analytical results for your sample.

No target parameters were detected in the method blank associated with your sample at the reporting limit levels noted on the data sheets in the final report.

SURROGATE STANDARD

A surrogate standard (i.e., a chemical compound not expected to occur in an environmental sample) is added to each sample, blank, and matrix spike sample just prior to extraction or processing. The recovery of the surrogate standard is used to monitor for unusual matrix effects, gross sample processing errors, etc. Surrogate recovery is evaluated for acceptance by determining whether the measured concentration falls within accepted limits.

NORTH CREEK ANALYTICAL

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RECEIVED FEB 6 1995

Accuracy is measured by percent recovery as in:

$$\% \text{ Recovery} = \frac{\text{(Measured Concentration)}}{\text{(Actual Concentration)}} \times 100$$

Precision is measured using duplicate tests by relative percent difference.

$$\text{RPD} = \frac{\text{(Result of Test 1 - Result of Test 2)}}{\text{(Result of Test 1 + Result of Test 2)/2}} \times 100$$

If you should have any questions concerning this report, please contact me.

Sincerely,

Howard Holmes
Project Manager

NORTH CREEK ANALYTICAL

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

BATCH QUALITY CONTROL RESULTS
TPH-D per Oregon DEQ

RECEIVED FEB 6 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501265
Received: 01/25/1995

METHOD BLANK
Batch # FC95002b
Results In mg/kg (ppm)

Compound	Result	MRL
Diesel/related	ND	25
Date Prepared	01/25/1995	
Date Analyzed	01/25/1995	

Surrogate Recovery (%)	Result	Control Limit
1-Chlorooctadecane	101	50-150

DUPLICATE
Batch # FC95002b
Results In mg/kg (ppm)

Duplicate ID P501265-1

Compound	Sample Conc	Dup Conc	RPD	QC Limit RPD
Diesel/related	2,000	2,800	34	50

LABORATORY CONTROL SAMPLE
Batch # FC95002a
Results In mg/kg (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Diesel/related	120	120	100	50-150

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

RECEIVED FEB 6 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501265
Received: 01/25/1995

METHOD BLANK
Batch # VS95004b
Results In mg/kg (ppm)

Compound	Result	MRL
Benzene	ND	0.0020
Carbon Tetrachloride	ND	0.0020
Chlorobenzene	ND	0.0020
Chloroform	ND	0.0020
1,4-Dichlorobenzene	ND	0.0020
1,2-Dichloroethane	ND	0.0020
1,1-Dichloroethene	ND	0.0020
Methyl Ethyl Ketone	ND	0.0075
Tetrachloroethene	ND	0.0020
Trichloroethene	ND	0.0020
Vinyl Chloride	ND	0.0050
Date Prepared	01/26/1995	
Date Analyzed	01/26/1995	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	103	74-121
1,2-Dichloroethane-d4	104	70-121
Toluene-d8	99	81-117

SCOEPA00019505

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

RECEIVED FEB

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P501265
Received: 01/25/1995

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # VS95004a **Spike ID P501226-1**
Results In mg/kg (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS %Rec
Benzene	0.020	ND	0.0212	106
Chlorobenzene	0.020	ND	0.0196	98
1,1-Dichloroethene	0.020	ND	0.0246	123
Toluene	0.020	ND	0.0218	109
Trichloroethene	0.020	ND	0.0211	106

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
Benzene	0.020	0.0214	107	0.94	21	66-142
Chlorobenzene	0.020	0.0203	102	4.0	21	60-133
1,1-Dichloroethene	0.020	0.0244	122	0.82	22	59-172
Toluene	0.020	0.0217	109	0	21	59-139
Trichloroethene	0.020	0.0213	107	0.94	24	62-137

SCOEPA00019506

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CHAIN OF CUSTODY REPORT

CLIENT: Wacker Siltronic
ADDRESS: 7200 N.W. Front AVE
Portland, OR
PHONE: 243-2020 X-374 FAX: 241-7599
PROJECT NAME: FAB-2
PROJECT NUMBER: Box-29, 31
SAMPLED BY: Dianne Mullan, Darykent

REPORT TO: Dianne Mullan
BILLING TO:
P.O. NUMBER: 31002
NCA QUOTE #:

TURNAROUND REQUEST in Business Days *
Organic & Inorganic Analyses: 10 | 5 | 3 | 2 | 1
(Please Select One)
Fuels & Hydrocarbon Analyses: 5 | 3 | 2 | 1
* Turnaround Requests less than standard will incur Rush Charges.
FAX RESULTS BY :

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	TCLP 8240	TPH-D	COMMENTS & PRESERVATIVES USED	NCA SAMPLE NUMBER
1. 95-536-Box-29	02-08-95/0915	S	2	X	X	All samples field on ice.	P502091-1
2.							
3. 95-537-Box-31	02-08-95/1030	S	2	X	X		P502092-1
4.							
5. 95-538-Box-32	02-08-95/1445	S	2	X	X		P502093-1
6.							
7.							
8.							
9.							
10.							

RELINQUISHED BY: Dianne E Mullan	DATE: 02/08/95	RECEIVED BY: EK Schmeltzer	DATE: 2-8-95
PRINT NAME: Dianne Mullan FIRM: WACKER Siltronic	TIME: 1540	PRINT NAME: FIRM: NCA	TIME: 1540
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
PRINT NAME: FIRM:	TIME:	PRINT NAME: FIRM:	TIME:

ADDITIONAL REMARKS:

PAGE 1 OF 1

COC Rev 6, 10/94

SCOEPA00019507

SAMPLES SENT TO OUTSIDE LABORATORY
FAB-2

1. WSC#: 95- 536

2. Date/Time of Sample: 2-08-95 / 0915

3. Name of Sampler: Gary Kent, Dianne Mullan

4. Sample Discription: Drop Box 29 ID# 119

   Other _____

5. Sent To: X North Creek Analytical
   (formerly Pacific Environmental Laboratory, Inc.)
   9405 SW Nimbus Avenue
   Beaverton, Oregon 97005
   643-9200

6. Analyses Required: VOCP 8240, TPH-D

7. Chain of Custody Submitted; Yes No

8. Purchase Order Number: 31002

9. Final Results Received On: _____

10. Additional Notes; _____

TJR 15 Nov 91
TJR 01 Nov 91
DEM 05 Jan 95

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

February 16, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

RE: JOB # BOX 29,31
P.O.# 31002
PROJECT - FAB-2

Enclosed are test results for your samples received in this lab on Feb. 08, 1995. For your reference, these analyses have been assigned our NCA # P502091.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

Please call if you have any questions.

Respectfully,

Howard Holmes
Project Manager

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TPH-D per Oregon DEQ
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P502091
Matrix: soil
Sampled: 02/08/1995
Received: 02/08/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-536-Box-29	P502091-1	Diesel/related	1,500	250	02/09/95	02/10/95

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019510

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TCLP VOC's per EPA 8240

Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P502091
Matrix: soil
Received: 02/08/1995
Sampled: 02/08/1995
Prepared: 02/13/95
Analyzed: 02/13/95

Client ID	Lab ID	Analyte	Result	MRL
95-536-Box-29	P502091-1	Benzene	ND	0.010
		Carbon Tetrachloride	ND	0.010
		Chlorobenzene	ND	0.010
		Chloroform	ND	0.010
		1,4-Dichlorobenzene	ND	0.010
		1,2-Dichloroethane	ND	0.010
		1,1-Dichloroethene	ND	0.010
		Methyl Ethyl Ketone	ND	0.13
		Tetrachloroethene	ND	0.010
		Trichloroethene	ND	0.010
		Vinyl Chloride	ND	0.025

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019511

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SURROGATE RECOVERIES (%)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P502091
Received: 02/08/1995

Sample Name	Analyte	Result	Control Limits
TPH-D per Oregon DEQ			
95-536-Box-29	1-Chlorooctadecane	-- *[1]	50-150
TCLP VOC's per EPA 1311, 8240			
95-536-Box-29	4-Bromofluorobenzene	95	74-121
	1,2-Dichloroethane-d4	92	70-121
	Toluene-d8	93	81-117

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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COMMENTS

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P502091
Received: 02/08/1995

1. Unable to calculate surrogate recovery due to matrix interference.

SCOEPA00019513

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February 16, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

Re: Quality Control Data

NCA project number P502091.

Note: Surrogate Recoveries are included in the final report.

QUALITY CONTROL DEFINITIONS

METHOD BLANK RESULTS

The method blank is an analyte-free matrix which is carried through the same analytical process as the samples. It is used to document contamination that may result from the analytical process.

SURROGATE STANDARD

A surrogate standard (i.e., a chemical compound not expected to occur in an environmental sample) is added to each sample, blank, and matrix spike sample just prior to extraction or processing. The recovery of the surrogate standard is used to monitor for unusual matrix effects, gross sample processing errors, etc. Surrogate recovery is evaluated for acceptance by determining whether the measured concentration falls within accepted limits.

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Accuracy is measured by percent recovery as in:

$$\% \text{ Recovery} = \frac{\text{(Measured Concentration)}}{\text{(Actual Concentration)}} \times 100$$

Precision is measured using duplicate tests by relative percent difference.

$$\text{RPD} = \frac{\text{(Result of Test 1 - Result of Test 2)}}{\text{(Result of Test 1 + Result of Test 2)/2}} \times 100$$

If you should have any questions concerning this report, please contact me.

Sincerely,

Howard Holmes
Project Manager

SCOEPA00019515

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BATCH QUALITY CONTROL RESULTS
TPH-D per Oregon DEQ

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P502091
Received: 02/08/1995

METHOD BLANK
Batch # FC95003b
Results In mg/kg (ppm)

Compound	Result	MRL
Diesel/related	ND	25
Date Prepared	02/09/1995	
Date Analyzed	02/09/1995	

Surrogate Recovery (%)	Result	Control Limit
1-Chlorooctadecane	91	50-150

DUPLICATE
Batch # FC95003b **Duplicate ID P502071A-3**
Results In mg/kg (ppm)

Compound	Sample Conc	Dup Conc	RPD	QC Limit RPD
Diesel/related	ND	ND	0	50

LABORATORY CONTROL SAMPLE
Batch # FC95003a
Results In mg/kg (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Diesel/related	120	120	100	50-150

SCOEPA00019516

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P502091
Received: 02/08/1995

METHOD BLANK
Batch # VS95006a
Results In mg/kg (ppm)

Compound	Result	MRL
Benzene	ND	0.0020
Carbon Tetrachloride	ND	0.0020
Chlorobenzene	ND	0.0020
Chloroform	ND	0.0020
1,4-Dichlorobenzene	ND	0.0020
1,2-Dichloroethane	ND	0.0020
1,1-Dichloroethene	ND	0.0020
Methyl Ethyl Ketone	ND	0.0025
Tetrachloroethene	ND	0.0020
Trichloroethene	ND	0.0020
Vinyl Chloride	ND	0.0050
Date Prepared	02/13/1995	
Date Analyzed	02/13/1995	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	100	74-121
1,2-Dichloroethane-d4	90	70-121
Toluene-d8	98	81-117

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P502091
Received: 02/08/1995

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # VS95006a **Spike ID P502093-1a**
Results In mg/kg (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS %Rec
Benzene	0.020	ND	0.0198	99
Chlorobenzene	0.020	ND	0.0209	105
1,1-Dichloroethene	0.020	ND	0.0170	85
Toluene	0.020	ND	0.0185	93
Trichloroethene	0.020	ND	0.0194	97

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
Benzene	0.020	0.0203	102	3.0	21	66-142
Chlorobenzene	0.020	0.0212	106	0.95	21	60-133
1,1-Dichloroethene	0.020	0.0167	84	1.2	22	59-172
Toluene	0.020	0.0189	95	2.1	21	59-139
Trichloroethene	0.020	0.0195	98	1.0	24	62-137

LABORATORY CONTROL SAMPLE
Batch # VS95006a
Results In mg/kg (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Benzene	0.020	0.0202	101	66-142
Chlorobenzene	0.020	0.0210	105	60-133
1,1-Dichloroethene	0.020	0.0164	82	59-172
Toluene	0.020	0.0192	96	59-139
Trichloroethene	0.020	0.0199	100	62-137

SCOEPA00019518

SAMPLES SENT TO OUTSIDE LABORATORY
FAB-2

1. WSC#: 95- 535

2. Date/Time of Sample: 1-31-95 / 1230

3. Name of Sampler: Gary Kent, Dianne Mullen

4. Sample Discription: Drop Box 30 ID# 4204173

Other _____

5. Sent To: X North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

6. Analyses Required: VCLP- 8240, TPH-D

7. Chain of Custody Submitted; (Yes) No

8. Purchase Order Number: 31002

9. Final Results Received On: _____

10. Additional Notes; _____

TJR 15 Nov 91
TJR 01 Nov 91
DEM 05 Jan 95

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CHAIN OF CUSTODY REPORT

CLIENT: Wacker Siltronic
ADDRESS: 7200 N.W. Front Ave. Portland, OR
PHONE: 243-2020 x-374 FAX:

REPORT TO: Dianne Mullen
BILLING TO:
P.O. NUMBER: 31002
NCA QUOTE #:

PROJECT NAME: FAB-2
PROJECT NUMBER: BOX-30
SAMPLED BY: Gary Kent Dianne Mullen

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: 10 | 5 | ~~3~~ | 2 | 1

(Please Select One)

Fuels & Hydrocarbon Analyses: 5 | ~~3~~ | 2 | 1

** Turnaround Requests less than standard will incur Rush Charges.*

FAX RESULTS BY :

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	TCLP-8240	TPH-D							COMMENTS & PRESERVATIVES USED	NCA SAMPLE NUMBER
1. 95-535-Box-30	1/31/95/1230	S	2	X	X							sample held on ice	P501313-1
2.													
3.													
4.													
5.													
6.													
7.													
8.													
9.													
10.													

RELINQUISHED BY: Dianne E Mullen DATE: 1-31-95
PRINT NAME: Dianne Mullen FIRM: Wacker Siltronic TIME: 1455

RECEIVED BY: R C Pedersen DATE: 1/31/95
PRINT NAME: FIRM: NCA TIME: 1500

RELINQUISHED BY: DATE:
PRINT NAME: FIRM: TIME:

RECEIVED BY: DATE:
PRINT NAME: FIRM: TIME:

ADDITIONAL REMARKS:

PAGE OF

COC Rev 6, 10/94

SCOEPA00019520

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RECEIVED FEB 1 0 1995

February 6, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

RE: JOB # BOX-30
P.O.# 31002
PROJECT - FAB-2

Enclosed are test results for your samples received in this lab on Jan. 31, 1995. For your reference, these analyses have been assigned our NCA # P501314.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

Please call if you have any questions.

Respectfully,

Howard Holmes
Project Manager

NORTH CREEK ANALYTICAL

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RECEIVED FEB 1 0 1995

TPH-D per Oregon DEQ
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501314
Matrix: soil
Sampled: 01/31/1995
Received: 01/31/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-535-Box 30	P501314-1	Diesel/related	83	25	01/31/95	01/31/95

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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TCLP VOC's per EPA 8240

Results In mg/kg (ppm)

RECEIVED FEB 1 0 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501314
Matrix: soil
Sampled: 01/31/1995
Received: 01/31/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-535-Box 30	P501314-1	Benzene	ND	0.0020	02/01/95	02/01/95
		Carbon Tetrachloride	ND	0.0020		
		Chlorobenzene	ND	0.0020		
		Chloroform	ND	0.0020		
		1,4-Dichlorobenzene	ND	0.0020		
		1,2-Dichloroethane	ND	0.0020		
		1,1-Dichloroethene	ND	0.0020		
		Methyl Ethyl Ketone	ND	0.0075		
		Tetrachloroethene	ND	0.0020		
		Trichloroethene	ND	0.0020		
		Vinyl Chloride	ND	0.0050		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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SURROGATE RECOVERIES (%)

RECEIVED FEB 1 0 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P501314
Received: 01/31/1995

Sample Name	Analyte	Result	Control Limits
TPH-D per Oregon DEQ			
95-535-Box 30	1-Chlorooctadecane	86	50-150
TCLP VOC's per EPA 8240			
95-535-Box 30	4-Bromofluorobenzene	100	74-121
	1,2-Dichloroethane-d4	94	70-121
	Toluene-d8	94	81-117

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

NORTH CREEK ANALYTICAL

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RECEIVED FEB 1 0 1995

February 6, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

Re: Quality Control Data

NCA project number P501314.

Note: Surrogate Recoveries are included in the final report.

QUALITY CONTROL DEFINITIONS

METHOD BLANK RESULTS

The method blank is an analyte-free matrix which is carried through the same analytical process as the samples. It is used to document contamination that may result from the analytical process.

SURROGATE STANDARD

A surrogate standard (i.e., a chemical compound not expected to occur in an environmental sample) is added to each sample, blank, and matrix spike sample just prior to extraction or processing. The recovery of the surrogate standard is used to monitor for unusual matrix effects, gross sample processing errors, etc. Surrogate recovery is evaluated for acceptance by determining whether the measured concentration falls within accepted limits.

NORTH CREEK ANALYTICAL

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Accuracy is measured by percent recovery as in:

$$\% \text{ Recovery} = \frac{\text{(Measured Concentration)}}{\text{(Actual Concentration)}} \times 100$$

Precision is measured using duplicate tests by relative percent difference.

$$\text{RPD} = \frac{\text{(Result of Test 1 - Result of Test 2)}}{\text{(Result of Test 1 + Result of Test 2)/2}} \times 100$$

If you should have any questions concerning this report, please contact me.

Sincerely,

Howard Holmes
Project Manager

SCOEPA00019526

NORTH CREEK ANALYTICAL
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BATCH QUALITY CONTROL RESULTS
TPH-D per Oregon DEQ

RECEIVED FEB 1 0 1995

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P501314
Received: 01/31/1995

METHOD BLANK
Batch # FC95002d
Results In mg/kg (ppm)

Compound	Result	MRL
Diesel/related	ND	25
Date Prepared	01/31/1995	
Date Analyzed	01/31/1995	

Surrogate Recovery (%)	Result	Control Limit
1-Chlorooctadecane	67	50-150

DUPLICATE
Batch # FC95002b **Duplicate ID P501265-1**
Results In mg/kg (ppm)

Compound	Sample Conc	Dup Conc	RPD	QC Limit RPD
Diesel/related	2,000	2,800	34	50

LABORATORY CONTROL SAMPLE
Batch # FC95002a
Results In mg/kg (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Diesel/related	120	120	100	50-150

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

RECEIVED FEB 1 0 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501314
Received: 01/31/1995

METHOD BLANK
Batch # VS95005a
Results In mg/kg (ppm)

Compound	Result	MRL
Benzene	ND	0.0020
Carbon Tetrachloride	ND	0.0020
Chlorobenzene	ND	0.0020
Chloroform	ND	0.0020
1,4-Dichlorobenzene	ND	0.0020
1,2-Dichloroethane	ND	0.0020
1,1-Dichloroethene	ND	0.0020
Methyl Ethyl Ketone	ND	0.0075
Tetrachloroethene	ND	0.0020
Trichloroethene	ND	0.0020
Vinyl Chloride	ND	0.0050
Date Prepared	02/01/1995	
Date Analyzed	02/01/1995	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	97	74-121
1,2-Dichloroethane-d4	86	70-121
Toluene-d8	98	81-117

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

RECEIVED FEB 1 0 1995

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P501314
Received: 01/31/1995

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # VS95005a **Spike ID P501314-1**
Results In mg/kg (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS %Rec
Benzene	0.020	ND	0.0218	109
Chlorobenzene	0.020	ND	0.0201	101
1,1-Dichloroethene	0.020	ND	0.0198	99
Toluene	0.020	ND	0.0209	105
Trichloroethene	0.020	ND	0.0200	100

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
Benzene	0.020	0.0245	123	13	21	66-142
Chlorobenzene	0.020	0.0241	121	19	21	60-133
1,1-Dichloroethene	0.020	0.0222	111	12	22	59-172
Toluene	0.020	0.0233	117	11	21	59-139
Trichloroethene	0.020	0.0221	111	11	24	62-137

SCOEPA00019529

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RECEIVED FEB 1 0 1995

CHAIN OF CUSTODY REPORT

CLIENT: Wacker Siltronic
ADDRESS: 7200 N.W. Front Ave. Portland, OR
PHONE: 243-2020 x-374 FAX:

REPORT TO: Dianne Mullen
BILLING TO:
P.O. NUMBER:
NCA QUOTE #:

PROJECT NAME: FAB-2
PROJECT NUMBER: Box-30
SAMPLED BY: Gary Kent, Dianne Mullen

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: 10 | 5 | ~~3~~ | 2 | 1

(Please Select One)

Fuels & Hydrocarbon Analyses: 5 | ~~3~~ | 2 | 1

** Turnaround Requests less than standard will incur Rush Charg*

FAX RESULTS BY :

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	Analysis Request: TCLP-8240	TPH-D								COMMENTS & PRESERVATIVES USED	NCA SAMPLE NUMBER
1. 95-535-Box-30	1/31/95/1230	S	2	X	X								sample held in	~~P501313-1~~ EB 1-31-95
2.														P501314-1
3.														
4.														
5.														
6.														
7.														
8.														
9.														
10.														

RELINQUISHED BY: Dianne E Mullen DATE: 1-31-95
PRINT NAME: Dianne Mullen FIRM: Wacker Siltronic TIME: 1455

RECEIVED BY: A C Pedersen DATE: 1/31/95
PRINT NAME: FIRM: NCA TIME: 1500

RELINQUISHED BY: DATE:
PRINT NAME: FIRM: TIME:

RECEIVED BY: DATE:
PRINT NAME: FIRM: TIME:

ADDITIONAL REMARKS:

PAGE OF

COC Rev 6, 10/94

SCOEPA00019530

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February 17, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

RE: JOB # BOX 29,31
P.O.# 31002
PROJECT - FAB-2

Enclosed are test results for your samples received in this lab on Feb. 08, 1995. For your reference, these analyses have been assigned our NCA # P502092.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

Please call if you have any questions.

Respectfully,

Howard Holmes
Project Manager

NORTH CREEK ANALYTICAL

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TPH-D per Oregon DEQ
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P502092
Matrix: soil
Sampled: 02/08/1995
Received: 02/08/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-537-Box-31	P502092-1	Diesel/related	630	130	02/09/95	02/10/95

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019532

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TCLP VOC's per EPA 8240

Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P502092
Matrix: soil
Received: 02/08/1995
Sampled: 02/08/1995
Prepared: 02/13/95
Analyzed: 02/13/95

Client ID	Lab ID	Analyte	Result	MRL
95-537-Box-31	P502092-1	Benzene	ND	0.0020
		Carbon Tetrachloride	ND	0.0020
		Chlorobenzene	ND	0.0020
		Chloroform	ND	0.0020
		1,4-Dichlorobenzene	ND	0.0020
		1,2-Dichloroethane	ND	0.0020
		1,1-Dichloroethene	ND	0.0020
		Methyl Ethyl Ketone	ND	0.025
		Tetrachloroethene	ND	0.0020
		Trichloroethene	ND	0.0020
		Vinyl Chloride	ND	0.0050

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019533

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SURROGATE RECOVERIES (%)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P502092
Received: 02/08/1995

Sample Name	Analyte	Result	Control Limits
TPH-D per Oregon DEQ			
95-537-Box-31	1-Chlorooctadecane	– *[1]	50-150
TCLP VOC's per EPA 8240			
95-537-Box-31	4-Bromofluorobenzene	91	74-121
	1,2-Dichloroethane-d4	87	70-121
	Toluene-d8	92	81-117

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

NORTH CREEK ANALYTICAL

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COMMENTS

Client:	Wacker Siltronic Corporation	NCA Number:	P502092
Project:	FAB-2	**Received:**	02/08/1995

1. Unable to calculate surrogate recovery due to matrix interference.

SCOEPA00019535

NORTH CREEK ANALYTICAL

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February 17, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

Re: Quality Control Data

NCA project number P502092.

Note: Surrogate Recoveries are included in the final report.

QUALITY CONTROL DEFINITIONS

METHOD BLANK RESULTS

The method blank is an analyte-free matrix which is carried through the same analytical process as the samples. It is used to document contamination that may result from the analytical process.

SURROGATE STANDARD

A surrogate standard (i.e., a chemical compound not expected to occur in an environmental sample) is added to each sample, blank, and matrix spike sample just prior to extraction or processing. The recovery of the surrogate standard is used to monitor for unusual matrix effects, gross sample processing errors, etc. Surrogate recovery is evaluated for acceptance by determining whether the measured concentration falls within accepted limits.

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Accuracy is measured by percent recovery as in:

$$\% \text{ Recovery} = \frac{\text{(Measured Concentration)}}{\text{(Actual Concentration)}} \times 100$$

Precision is measured using duplicate tests by relative percent difference.

$$\text{RPD} = \frac{\text{(Result of Test 1 - Result of Test 2)}}{\text{(Result of Test 1 + Result of Test 2)/2}} \times 100$$

If you should have any questions concerning this report, please contact me.

Sincerely,

Howard Holmes
Project Manager

SCOEPA00019537

NORTH CREEK ANALYTICAL
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BATCH QUALITY CONTROL RESULTS
TPH-D per Oregon DEQ

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P502092
Received: 02/08/1995

METHOD BLANK
Batch # FC95003b
Results In mg/kg (ppm)

Compound	Result	MRL
Diesel/related	ND	25
Date Prepared	02/09/1995	
Date Analyzed	02/09/1995	

Surrogate Recovery (%)	Result	Control Limit
1-Chlorooctadecane	91	50-150

DUPLICATE
Batch # FC95003b **Duplicate ID P502071A-3**
Results In mg/kg (ppm)

Compound	Sample Conc	Dup Conc	RPD	QC Limit RPD
Diesel/related	ND	ND	0	50

LABORATORY CONTROL SAMPLE
Batch # FC95003a
Results In mg/kg (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Diesel/related	120	120	100	50-150

SCOEPA00019538

NORTH CREEK ANALYTICAL

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P502092
Received: 02/08/1995

METHOD BLANK
Batch # VS95006a
Results In mg/kg (ppm)

Compound	Result	MRL
Benzene	ND	0.0020
Carbon Tetrachloride	ND	0.0020
Chlorobenzene	ND	0.0020
Chloroform	ND	0.0020
1,4-Dichlorobenzene	ND	0.0020
1,2-Dichloroethane	ND	0.0020
1,1-Dichloroethene	ND	0.0020
Methyl Ethyl Ketone	ND	0.025
Tetrachloroethene	ND	0.0020
Trichloroethene	ND	0.0020
Vinyl Chloride	ND	0.0050
Date Prepared	02/13/1995	
Date Analyzed	02/13/1995	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	100	74-121
1,2-Dichloroethane-d4	90	70-121
Toluene-d8	98	81-117

SCOEPA00019539

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P502092
Received: 02/08/1995

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # VS95006a **Spike ID P502093-1a**
Results In mg/kg (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS %Rec
Benzene	0.020	ND	0.0198	99
Chlorobenzene	0.020	ND	0.0209	105
1,1-Dichloroethene	0.020	ND	0.0170	85
Toluene	0.020	ND	0.0185	93
Trichloroethene	0.020	ND	0.0194	97

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
Benzene	0.020	0.0203	102	3.0	21	66-142
Chlorobenzene	0.020	0.0212	106	0.95	21	60-133
1,1-Dichloroethene	0.020	0.0167	84	1.2	22	59-172
Toluene	0.020	0.0189	95	2.1	21	59-139
Trichloroethene	0.020	0.0195	98	1.0	24	62-137

LABORATORY CONTROL SAMPLE
Batch # VS95006a
Results In mg/kg (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Benzene	0.020	0.0202	101	66-142
Chlorobenzene	0.020	0.0210	105	60-133
1,1-Dichloroethene	0.020	0.0164	82	59-172
Toluene	0.020	0.0192	96	59-139
Trichloroethene	0.020	0.0199	100	62-137

SCOEPA00019540

SAMPLES SENT TO OUTSIDE LABORATORY
FAB-2

1. WSC#: 95-539

2. Date/Time of Sample: 2-21-95 / 0800

3. Name of Sampler: Dianne Mullan

4. Sample Discription: Drop Box 33 ID# 165

Other _____

5. Sent To: X North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

6. Analyses Required: VOCLP 8240, TPH-D

7. Chain of Custody Submitted; Yes No

8. Purchase Order Number: 31002

9. Final Results Received On: _____

10. Additional Notes; _____

TJR 15 Nov 91
TJR 01 Nov 91
DEM 05 Jan 95

NORTH CREEK ANALYTICAL

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CHAIN OF CUSTODY REPORT

CLIENT: Wacker Siltronic
ADDRESS: 7200 N.W. Front Portland, OR
PHONE: 243-2020 X-374 FAX: 241-7599
PROJECT NAME: FAB-2
PROJECT NUMBER: Box-33
SAMPLED BY: Dianne Mullan

REPORT TO: Dianne Mullan
BILLING TO:
P.O. NUMBER: 31002
NCA QUOTE #:

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: [X] 10 [ ] 5 [ ] 3 [ ] 2 [ ] 1

(Please Select One)

Fuels & Hydrocarbon Analyses: [X] 5 [ ] 3 [ ] 2 [ ] 1

** Turnaround Requests less than standard will incur Rush Charges.*

FAX RESULTS BY :

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	TCLP 8240	TPH-D	BTEX	COMMENTS & PRESERVATIVES USED	NCA SAMPLE NUMBER
1. 95-539-Box-33	2-21-95/0800	S	2	X	X	X	sample held on ice.	P502233
2.								
3.								
4.								
5.								
6.								
7.								
8.								
9.								
10.								

RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
Dianne Mullan	~~2-21-95~~ 2-22-95	Sara McClurg	2/22/95
PRINT NAME: Dianne Mullan FIRM: Wacker Siltronic	TIME: 1410	PRINT NAME: Sara McClurg FIRM: NCA	TIME: 1510
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
PRINT NAME: FIRM:	TIME:	PRINT NAME: FIRM:	TIME:

ADDITIONAL REMARKS:

PAGE OF

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SCOEPA00019542

NORTH CREEK ANALYTICAL

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February 28, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

RE: JOB # BOX-33
P.O.# 31002
PROJECT - FAB-2

Enclosed are test results for your samples received in this lab on Feb. 22, 1995. For your reference, these analyses have been assigned our NCA # P502233.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

This report will be accompanied by a separate Quality Control Data Report, unless omitted by client request.

Please call if you have any questions.

Respectfully,

Howard Holmes
Project Manager

NORTH CREEK ANALYTICAL

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TPH-D per Oregon DEQ
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P502233
Matrix: soil
Sampled: 02/21/1995
Received: 02/22/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-539-Box-33	P502233-1	Diesel/related	2,500	130	02/23/95	02/25/95

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019544

NORTH CREEK ANALYTICAL

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BTEX per EPA 8020
Results In ug/kg (ppb)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P502233
Matrix: soil
Sampled: 02/21/1995
Received: 02/22/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-539-Box-33	P502233-1	Benzene	1400	25	02/28/95	02/28/95
		Toluene	1200	25		
		Ethylbenzene	1800	25		
		Xylene (total)	3000	25		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

NORTH CREEK ANALYTICAL

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TCLP VOC's per EPA 8240
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P502233
Matrix: soil
Received: 02/22/1995
Sampled: 02/21/1995
Prepared: 02/27/95
Analyzed: 02/27/95

Client ID	Lab ID	Analyte	Result	MRL
95-539-Box-33	P502233-1	Benzene	2.0	0.25
		Carbon Tetrachloride	ND	0.25
		Chlorobenzene	ND	0.25
		Chloroform	ND	0.25
		1,4-Dichlorobenzene	ND	0.25
		1,2-Dichloroethane	ND	0.25
		1,1-Dichloroethene	ND	0.25
		Methyl Ethyl Ketone	ND	0.94
		Tetrachloroethene	ND	0.25
		Trichloroethene	ND	0.25
		Vinyl Chloride	ND	0.63

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019546

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SURROGATE RECOVERIES (%)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P502233
Received: 02/22/1995

Sample Name	Analyte	Result	Control Limits
TPH-D per Oregon DEQ			
95-539-Box-33	1-Chlorooctadecane	-- *[1]	50-150
BTEX per EPA 8020			
95-539-Box-33	4-Bromofluorobenzene	104	63-126
TCLP VOC's per EPA 1311, 8240			
95-539-Box-33	4-Bromofluorobenzene	100	74-121
	1,2-Dichloroethane-d4	83	70-121
	Toluene-d8	90	81-117

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019547

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COMMENTS

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P502233
Received: 02/22/1995

1. Unable to calculate surrogate recovery due to matrix interference.

SCOEPA00019548

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February 28, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

Re: Quality Control Data
JOB # BOX-33
P.O.# 31002
PROJECT - FAB-2

NCA project number P502233.

Note: Surrogate Recoveries are included in the final report.

QUALITY CONTROL DEFINITIONS

METHOD BLANK RESULTS

The method blank is an analyte-free matrix which is carried through the same analytical process as the samples. It is used to document contamination that may result from the analytical process.

SURROGATE STANDARD

A surrogate standard (i.e., a chemical compound not expected to occur in an environmental sample) is added to each sample, blank, and matrix spike sample just prior to extraction or processing. The recovery of the surrogate standard is used to monitor for unusual matrix effects, gross sample processing errors, etc. Surrogate recovery is evaluated for acceptance by determining whether the measured concentration falls within accepted limits.

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Accuracy is measured by percent recovery as in:

$$\% \text{ Recovery} = \frac{\text{(Measured Concentration)}}{\text{(Actual Concentration)}} \times 100$$

Precision is measured using duplicate tests by relative percent difference.

$$\text{RPD} = \frac{\text{(Result of Test 1 - Result of Test 2)}}{\text{(Result of Test 1 + Result of Test 2)/2}} \times 100$$

If you should have any questions concerning this report, please contact me.

Sincerely,

Howard Holmes
Project Manager

SCOEPA00019550

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BATCH QUALITY CONTROL RESULTS
TPH-D per Oregon DEQ

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P502233
Received: 02/22/1995

METHOD BLANK
Batch # FC95004a
Results In mg/kg (ppm)

Compound	Result	MRL
Diesel/related	ND	25
Date Prepared	02/23/1995	
Date Analyzed	02/24/1995	

Surrogate Recovery (%)	Result	Control Limit
1-Chlorooctadecane	87	50-150

DUPLICATE
Batch # FC95004a
Results In mg/kg (ppm)
Duplicate ID P502227A-1

Compound	Sample Conc	Dup Conc	RPD	QC Limit RPD
Diesel/related	1,600	1,500	6.5	50

LABORATORY CONTROL SAMPLE
Batch # FC95004a
Results In mg/kg (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Diesel/related	120	110	92	50-150

SCOEPA00019551

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BATCH QUALITY CONTROL RESULTS
BTEX per EPA 8020

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P502233
Received: 02/22/1995

METHOD BLANK
Batch # BS95006b
Results In ug/kg (ppb)

Compound	Result	MRL
Benzene	ND	13
Toluene	ND	13
Ethylbenzene	ND	13
Xylene (total)	ND	13
Date Prepared	02/28/1995	
Date Analyzed	02/28/1995	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	107	63-126

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # BS95006a **Spike ID P502267-1**
Results In ug/kg (ppb)

Compound	Spike Added	Sample Conc	MS Conc	MS %Rec
Benzene	20	ND	16.4	82
Chlorobenzene	20	ND	13.5	68
Ethylbenzene	20	ND	13.3	67
Toluene	20	0.769	14.8	70
o-Xylene	20	0.503	12.6	60

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
Benzene	20	15.5	78	5.0	17	56-123
Chlorobenzene	20	12.6	63	7.6	16	53-124
Ethylbenzene	20	12.2	61	9.4	20	45-130
Toluene	20	13.8	65	7.4	24	54-123
o-Xylene	20	11.7	56	6.9	20	50-127

SCOEPA00019552

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BATCH QUALITY CONTROL RESULTS
BTEX per EPA 8020

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P502233
Received: 02/22/1995

LABORATORY CONTROL SAMPLE
Batch # BS95006a
Results In ug/kg (ppb)

Compound	True	Found	% Rec	QC Limit % Rec
Benzene	20	20.0	100	69-138
Chlorobenzene	20	18.6	93	72-137
Ethylbenzene	20	18.3	92	61-141
Toluene	20	18.4	92	53-151
o-Xylene	20	17.6	88	62-144

SCOEPA00019553

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P502233
Received: 02/22/1995

METHOD BLANK
Batch # VE95007a
Results In mg/kg (ppm)

Compound	Result	MRL
Benzene	ND	0.25
Carbon Tetrachloride	ND	0.25
Chlorobenzene	ND	0.25
Chloroform	ND	0.25
1,4-Dichlorobenzene	ND	0.25
1,2-Dichloroethane	ND	0.25
1,1-Dichloroethene	ND	0.25
Methyl Ethyl Ketone	ND	0.94
Tetrachloroethene	ND	0.25
Trichloroethene	ND	0.25
Vinyl Chloride	ND	0.63
Date Prepared	02/27/1995	
Date Analyzed	02/27/1995	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	107	74-121
1,2-Dichloroethane-d4	90	70-121
Toluene-d8	98	81-117

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P502233
Received: 02/22/1995

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # VE95007a **Spike ID P502260-1**
Results In mg/kg (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS %Rec
Benzene	2.5	ND	2.41	96
Chlorobenzene	2.5	ND	2.84	114
1,1-Dichloroethene	2.5	ND	2.62	105
Toluene	2.5	ND	2.66	106
Trichloroethene	2.5	ND	2.58	103

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
Benzene	2.5	2.45	98	2.1	21	66-142
Chlorobenzene	2.5	2.83	113	0.88	21	60-133
1,1-Dichloroethene	2.5	2.63	105	0	22	59-172
Toluene	2.5	2.63	105	0.95	21	59-139
Trichloroethene	2.5	2.58	103	0	24	62-137

LABORATORY CONTROL SAMPLE
Batch # VE95007a
Results In mg/kg (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Benzene	2.5	2.16	86	66-142
Chlorobenzene	2.5	2.70	108	60-133
1,1-Dichloroethene	2.5	2.19	88	59-172
Toluene	2.5	2.46	98	59-139
Trichloroethene	2.5	2.44	98	62-137

SCOEPA00019555

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CHAIN OF CUSTODY REPORT

CLIENT: Wacker Siltronic

ADDRESS: 7200 N.W. Front Portland, OR

PHONE: 243-2020 X-374 FAX: 241-7599

PROJECT NAME: FAB-2

PROJECT NUMBER: Box-33

SAMPLED BY: Dianne Mullan

REPORT TO: Dianne Mullan

BILLING TO:

P.O. NUMBER: 31002

NCA QUOTE #:

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: [X] 10 [ ] 5 [ ] 3 [ ] 2 [ ] 1

(Please Select One)

Fuels & Hydrocarbon Analyses: [X] 5 [ ] 3 [ ] 2 [ ] 1

** Turnaround Requests less than standard will incur Rush Charg*

FAX RESULTS BY :

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	TCLP 8240	TPH-D	BTEX					COMMENTS & PRESERVATIVES USED	NCA SAMPLE NUMBER
1. 95-539-Box-33	2-21-95/0800	S	2	X	X	X					sample held on ice.	P5022331
2.												
3.												
4.												
5.												
6.												
7.												
8.												
9.												
10.												

RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
Dianne Mullan	~~2-21-95~~ 2-22-95	Sara McClurg	2/22/95
PRINT NAME: Dianne Mullan FIRM: Wacker Siltronic	TIME: 1410	PRINT NAME: Sara McClurg FIRM: NCA	TIME: 1510
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
PRINT NAME: FIRM:	TIME:	PRINT NAME: FIRM:	TIME:

ADDITIONAL REMARKS:

PAGE OF

COC Rev 6, 10/94

SCOEPA00019556

SAMPLES SENT TO OUTSIDE LABORATORY
FAB-2

1. WSC#: 95-546

2. Date/Time of Sample: 2-27-95 / 1415

3. Name of Sampler: Dianne Mullan, Gary Kent

4. Sample Discription: Drop Box 34 ID# 129

Other _____

5. Sent To: X North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

6. Analyses Required: JCLP 8240, TPH-D

7. Chain of Custody Submitted; Yes No

8. Purchase Order Number: 31002

9. Final Results Received On: _____

10. Additional Notes; _____

TJR 15 Nov 91
TJR 01 Nov 91
DEM 05 Jan 95

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March 8, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

RE: JOB # BOX-34
P.O.#
PROJECT - FAB-2

Enclosed are test results for your samples received in this lab on Feb. 27, 1995. For your reference, these analyses have been assigned our NCA # P502306.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

This report will be accompanied by a separate Quality Control Data Report, unless omitted by client request.

Please call if you have any questions.

Respectfully,

Howard Holmes
Project Manager

NORTH CREEK ANALYTICAL

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TPH-D per Oregon DEQ
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P502306
Matrix: soil
Sampled: 02/27/95
Received: 02/27/95

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-546-Box 34	P502306-1	Diesel/related	390 *[1]	25	03/01/95	03/02/95

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019559

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TCLP VOC's per EPA 8240
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P502306
Matrix: soil
Received: 02/27/95
Sampled: 02/27/95
Prepared: 03/02/95
Analyzed: 03/02/95

Client ID	Lab ID	Analyte	Result	MRL
95-546-Box 34	P502306-1	Benzene	ND	0.010
		Carbon Tetrachloride	ND	0.010
		Chlorobenzene	ND	0.010
		Chloroform	ND	0.010
		1,4-Dichlorobenzene	ND	0.010
		1,2-Dichloroethane	ND	0.010
		1,1-Dichloroethene	ND	0.010
		Methyl Ethyl Ketone	ND	0.13
		Tetrachloroethene	ND	0.010
		Trichloroethene	ND	0.010
		Vinyl Chloride	ND	0.025

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019560

NORTH CREEK ANALYTICAL

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SURROGATE RECOVERIES (%)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P502306
Received: 02/27/1995

Sample Name	Analyte	Result	Control Limits
TPH-D per Oregon DEQ			
95-546-Box 34	1-Chlorooctadecane	98	50-150
TCLP VOC's per EPA 1311, 8240			
95-546-Box 34	4-Bromofluorobenzene	106	74-121
	1,2-Dichloroethane-d4	87	70-121
	Toluene-d8	99	81-117

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019561

NORTH CREEK ANALYTICAL

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COMMENTS

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P502306
Received: 02/27/1995

1. Detected hydrocarbons in the diesel range appear to be due to a high concentration of heavy/bunker range hydrocarbons.

SCOEPA00019562

NORTH CREEK ANALYTICAL

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March 8, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

Re: Quality Control Data
JOB # BOX-34
P.O.#
PROJECT - FAB-2

NCA project number P502306.

Note: Surrogate Recoveries are included in the final report.

QUALITY CONTROL DEFINITIONS

METHOD BLANK RESULTS

The method blank is an analyte-free matrix which is carried through the same analytical process as the samples. It is used to document contamination that may result from the analytical process.

SURROGATE STANDARD

A surrogate standard (i.e., a chemical compound not expected to occur in an environmental sample) is added to each sample, blank, and matrix spike sample just prior to extraction or processing. The recovery of the surrogate standard is used to monitor for unusual matrix effects, gross sample processing errors, etc. Surrogate recovery is evaluated for acceptance by determining whether the measured concentration falls within accepted limits.

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Accuracy is measured by percent recovery as in:

$$\% \text{ Recovery} = \frac{\text{(Measured Concentration)}}{\text{(Actual Concentration)}} \times 100$$

Precision is measured using duplicate tests by relative percent difference.

$$\text{RPD} = \frac{\text{(Result of Test 1 - Result of Test 2)}}{\text{(Result of Test 1 + Result of Test 2)/2}} \times 100$$

If you should have any questions concerning this report, please contact me.

Sincerely,

Howard Holmes
Project Manager

SCOEPA00019564

NORTH CREEK ANALYTICAL
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BATCH QUALITY CONTROL RESULTS
TPH-D per Oregon DEQ

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P502306
Received: 02/27/1995

METHOD BLANK
Batch # FC95005a
Results In mg/kg (ppm)

Compound	Result	MRL
Diesel/related	ND	25
Date Prepared	03/01/1995	
Date Analyzed	03/02/1995	

Surrogate Recovery (%)	Result	Control Limit
1-Chlorooctadecane	112	50-150

DUPLICATE
Batch # FC95005a **Duplicate ID P502269-1**
Results In mg/kg (ppm)

Compound	Sample Conc	Dup Conc	RPD	QC Limit RPD
Diesel/related	180	240	29	50

LABORATORY CONTROL SAMPLE
Batch # FC95005a
Results In mg/kg (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Diesel/related	120	130	108	50-150

SCOEPA00019565

NORTH CREEK ANALYTICAL
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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P502306
Received: 02/27/1995

METHOD BLANK
Batch # VS95008b
Results In mg/kg (ppm)

Compound	Result	MRL
Benzene	ND	0.0020
Carbon Tetrachloride	ND	0.0020
Chlorobenzene	ND	0.0020
Chloroform	ND	0.0020
1,4-Dichlorobenzene	ND	0.0020
1,2-Dichloroethane	ND	0.0020
1,1-Dichloroethene	ND	0.0020
Methyl Ethyl Ketone	ND	0.0075
Tetrachloroethene	ND	0.0020
Trichloroethene	ND	0.0020
Vinyl Chloride	ND	0.0050
Date Prepared	03/02/1995	
Date Analyzed	03/02/1995	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	110	74-121
1,2-Dichloroethane-d4	86	70-121
Toluene-d8	99	81-117

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # VS95008a **Spike ID P502260-1**
Results In mg/kg (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS %Rec
Benzene	0.020	ND	0.0199	100
Chlorobenzene	0.020	ND	0.0223	112
1,1-Dichloroethene	0.020	ND	0.0164	82
Toluene	0.020	ND	0.0174	87
Trichloroethene	0.020	ND	0.0185	93

SCOEPA00019566

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P502306
Received: 02/27/1995

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
Benzene	0.020	0.0208	104	3.9	21	66-142
Chlorobenzene	0.020	0.0230	115	2.6	21	60-133
1,1-Dichloroethene	0.020	0.0169	85	3.6	22	59-172
Toluene	0.020	0.0175	88	1.1	21	59-139
Trichloroethene	0.020	0.0189	95	2.1	24	62-137

LABORATORY CONTROL SAMPLE
Batch # VS95008b
Results In mg/kg (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Benzene	0.020	0.0172	86	66-142
Chlorobenzene	0.020	0.0222	111	60-133
1,1-Dichloroethene	0.020	0.0171	86	59-172
Toluene	0.020	0.0195	98	59-139
Trichloroethene	0.020	0.0192	96	62-137

SCOEPA00019567

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9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202

CHAIN OF CUSTODY REPORT

CLIENT: Wacker Si/tronic

ADDRESS: 7200 N.W. Front Ave Portland, OR

PHONE: 243-2020 x-374 FAX: 241-7599

PROJECT NAME: FAB-2

PROJECT NUMBER: BOX-34

SAMPLED BY: Dianne Mullan, Gary Kent

REPORT TO: Dianne Mullan

BILLING TO:

P.O. NUMBER: 31002

NCA QUOTE #:

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: ~~10~~ 5 3 2 1

(Please Select One)

Fuels & Hydrocarbon Analyses: ~~5~~ 3 2 1

* Turnaround Requests less than standard will incur Rush Charg.

FAX RESULTS BY :

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	TCLP 8240	TPH-D	COMMENTS & PRESERVATIVES USED	NCA SAMPLE NUMBER
1. 95-546-Box 34	2-27-95/1415	S	2	X	X	held on ice	P502306
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							

RELINQUISHED BY: Dianne E Mullan Wacker	DATE: 2-27-95	RECEIVED BY: J C Pederson	DATE: 2/27/95
PRINT NAME: Dianne Mullan FIRM: Si/tronic	TIME: 1610	PRINT NAME: FIRM: NCA	TIME: 1610
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
PRINT NAME: FIRM:	TIME:	PRINT NAME: FIRM:	TIME:

ADDITIONAL REMARKS:

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SCOEPA00019568

NORTH CREEK ANALYTICAL

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9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202

CHAIN OF CUSTODY REPORT

CLIENT: Wacker Siltronic

ADDRESS: 7200 N.W. Front Ave Portland, OR

PHONE: 243-2020 x-374 FAX: 241-7599

PROJECT NAME: FAB-2

PROJECT NUMBER: BOX-34

SAMPLED BY: Dianne Mullan, Gary Kent

REPORT TO: Dianne Mullan

BILLING TO:

P.O. NUMBER: 31002

NCA QUOTE #:

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: ~~10~~ 5 3 2 1

(Please Select One)

Fuels & Hydrocarbon Analyses: ~~5~~ 3 2 1

* Turnaround Requests less than standard will incur Rush Charges.

FAX RESULTS BY :

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	TCLP-8240	TPH-D							COMMENTS & PRESERVATIVES USED	NCA SAMPLE NUMBER
1. 95-546-Box 34	2-27-95/1415	S	2	X	X							held on ice	P502306
2.													
3.													
4.													
5.													
6.													
7.													
8.													
9.													
10.													

RELINQUISHED BY: Dianne E Mullan	DATE: 2-27-95	RECEIVED BY: O C Pederson	DATE: 2/27/95
PRINT NAME: Dianne Mullan FIRM: Wacker Siltronic	TIME: 1610	PRINT NAME: FIRM: NCA	TIME: 1610
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
PRINT NAME: FIRM:	TIME:	PRINT NAME: FIRM:	TIME:

ADDITIONAL REMARKS:

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SCOEPA00019569

SAMPLES SENT TO OUTSIDE LABORATORY
FAB-2

1. WSC#: 95- 548

2. Date/Time of Sample: 3-1-95 / 1145

3. Name of Sampler: Vim long, Dwaine Mullan

4. Sample Discription: Drop Box 35 ID# 115

Other _____

5. Sent To: X North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

6. Analyses Required: VOCLP 8240, TPH-D

7. Chain of Custody Submitted: Yes No

8. Purchase Order Number: 31002

9. Final Results Received On: _____

10. Additional Notes; _____

TJR 15 Nov 91
TJR 01 Nov 91
DEM 05 Jan 95

NORTH CREEK ANALYTICAL

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East 11115 Montgomery, Suite B, Spokane, WA 99206-4779 (509) 924-9200 FAX 924-9290
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202

CHAIN OF CUSTODY REPORT

CLIENT: Wacker Siltronic
ADDRESS: 7200 N.W. FRONT AVE Portland OR
PHONE: 243-2020 x-374 FAX: 241-7599

REPORT TO: Dianne & Mullan
BILLING TO:
P.O. NUMBER: 31002
NCA QUOTE #:

PROJECT NAME: FAB-2
PROJECT NUMBER: Box, 35+36
SAMPLED BY: Jim Long, Dianne Mullan

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: ~~10~~ 5 3 2 1

(Please Select One)

Fuels & Hydrocarbon Analyses: ~~5~~ 3 2 1

** Turnaround Requests less than standard will incur Rush Charges.*

FAX RESULTS BY :

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	TCLP 8240	TPH-D						COMMENTS & PRESERVATIVES USED	NCA SAMPLE NUMBER
1. 95-548-Box-35	3-1-95/ 1145	S	1	X	X						Samples filled 5? gal	P503006-1
2.												
3. 95-549-Box-36	3-1-95/ 1155	S	1	X	X							P503007-1
4.												
5.												
6.												
7.												
8.												
9.												
10.												

RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
Dianne Mullan	3-1-95	Sara McClurg	3-1-95
PRINT NAME: Dianne Mullan FIRM: Wacker Siltronic	TIME: 1440	PRINT NAME: Sara McClurg FIRM: NCA	TIME: 1440
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
PRINT NAME: FIRM:	TIME:	PRINT NAME: FIRM:	TIME:

ADDITIONAL REMARKS:

PAGE OF

COC Rev 6, 10/94

SCOEPA00019571

NORTH CREEK ANALYTICAL

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March 8, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

RE: JOB # BOX 35 & 36
P.O.# 31002
PROJECT - FAB-2

Enclosed are test results for your samples received in this lab on Mar. 01, 1995. For your reference, these analyses have been assigned our NCA # P503006.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

This report will be accompanied by a separate Quality Control Data Report, unless omitted by client request.

Please call if you have any questions.

Respectfully,

Howard Holmes
Project Manager

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TPH-D per Oregon DEQ
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P503006
Matrix: soil
Sampled: 03/01/95
Received: 03/01/95

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-548-Box-35	P503006-1	Diesel/related	96 *[1]	25	03/02/95	03/02/95

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019573

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TCLP VOC's per EPA 8240
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P503006
Matrix: soil
Received: 03/01/95
Sampled: 03/01/95
Prepared: 03/04/95
Analyzed: 03/04/95

Client ID	Lab ID	Analyte	Result	MRL
95-548-Box-35	P503006-1	Benzene	ND	0.010
		Carbon Tetrachloride	ND	0.010
		Chlorobenzene	ND	0.010
		Chloroform	ND	0.010
		1,4-Dichlorobenzene	ND	0.010
		1,2-Dichloroethane	ND	0.010
		1,1-Dichloroethene	ND	0.010
		Methyl Ethyl Ketone	ND	0.038
		Tetrachloroethene	ND	0.010
		Trichloroethene	ND	0.010
		Vinyl Chloride	ND	0.025

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019574

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SURROGATE RECOVERIES (%)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P503006
Received: 03/01/1995

Sample Name	Analyte	Result	Control Limits
TPH-D per Oregon DEQ			
95-548-Box-35	1-Chlorooctadecane	111	50-150
TCLP VOC's per EPA 1311, 8240			
95-548-Box-35	4-Bromofluorobenzene	98	74-121
	1,2-Dichloroethane-d4	95	70-121
	Toluene-d8	99	81-117

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019575

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

COMMENTS

Client:	Wacker Siltronic Corporation	NCA Number:	P503006
Project:	FAB-2	**Received:**	03/01/1995

1. Detected hydrocarbons in the diesel range appear to be due to a high concentration of heavy/bunker range hydrocarbons.

SCOEPA00019576

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

March 8, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

Re: Quality Control Data
JOB # BOX 35 & 36
P.O.# 31002
PROJECT - FAB-2

NCA project number P503006.

Note: Surrogate Recoveries are included in the final report.

QUALITY CONTROL DEFINITIONS

METHOD BLANK RESULTS

The method blank is an analyte-free matrix which is carried through the same analytical process as the samples. It is used to document contamination that may result from the analytical process.

SURROGATE STANDARD

A surrogate standard (i.e., a chemical compound not expected to occur in an environmental sample) is added to each sample, blank, and matrix spike sample just prior to extraction or processing. The recovery of the surrogate standard is used to monitor for unusual matrix effects, gross sample processing errors, etc. Surrogate recovery is evaluated for acceptance by determining whether the measured concentration falls within accepted limits.

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Accuracy is measured by percent recovery as in:

$$\% \text{ Recovery} = \frac{\text{(Measured Concentration)}}{\text{(Actual Concentration)}} \times 100$$

Precision is measured using duplicate tests by relative percent difference.

$$\text{RPD} = \frac{\text{(Result of Test 1 - Result of Test 2)}}{\text{(Result of Test 1 + Result of Test 2)/2}} \times 100$$

If you should have any questions concerning this report, please contact me.

Sincerely,

Howard Holmes
Project Manager

SCOEPA00019578

NORTH CREEK ANALYTICAL
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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

BATCH QUALITY CONTROL RESULTS
TPH-D per Oregon DEQ

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P503006
Received: 03/01/1995

METHOD BLANK
Batch # FC95005b
Results In mg/kg (ppm)

Compound	Result	MRL
Diesel/related	ND	25
Date Prepared	03/02/1995	
Date Analyzed	03/02/1995	

Surrogate Recovery (%)	Result	Control Limit
1-Chlorooctadecane	120	50-150

DUPLICATE
Batch # FC95005b **Duplicate ID P503020-1**
Results In mg/kg (ppm)

Compound	Sample Conc	Dup Conc	RPD	QC Limit RPD
Diesel/related	650	550	17	50

LABORATORY CONTROL SAMPLE
Batch # FC95005a
Results In mg/kg (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Diesel/related	120	130	108	50-150

SCOEPA00019579

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P503006
Received: 03/01/1995

METHOD BLANK
Batch # VS95008d
Results In mg/kg (ppm)

Compound	Result	MRL
Benzene	ND	0.0020
Carbon Tetrachloride	ND	0.0020
Chlorobenzene	ND	0.0020
Chloroform	ND	0.0020
1,4-Dichlorobenzene	ND	0.0020
1,2-Dichloroethane	ND	0.0020
1,1-Dichloroethene	ND	0.0020
Methyl Ethyl Ketone	ND	0.0075
Tetrachloroethene	ND	0.0020
Trichloroethene	ND	0.0020
Vinyl Chloride	ND	0.0050
Date Prepared	03/04/1995	
Date Analyzed	03/04/1995	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	98	74-121
1,2-Dichloroethane-d4	90	70-121
Toluene-d8	99	81-117

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # VS95008a **Spike ID P502260-1**
Results In mg/kg (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS %Rec
Benzene	0.020	ND	0.0199	100
Chlorobenzene	0.020	ND	0.0223	112
1,1-Dichloroethene	0.020	ND	0.0164	82
Toluene	0.020	ND	0.0174	87
Trichloroethene	0.020	ND	0.0185	93

SCOEPA00019580

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P503006
Received: 03/01/1995

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
Benzene	0.020	0.0208	104	3.9	21	66-142
Chlorobenzene	0.020	0.0230	115	2.6	21	60-133
1,1-Dichloroethene	0.020	0.0169	85	3.6	22	59-172
Toluene	0.020	0.0175	88	1.1	21	59-139
Trichloroethene	0.020	0.0189	95	2.1	24	62-137

LABORATORY CONTROL SAMPLE
Batch # VS95008d
Results In mg/kg (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Benzene	0.020	0.0176	88	66-142
Chlorobenzene	0.020	0.0185	93	60-133
1,1-Dichloroethene	0.020	0.0158	79	59-172
Toluene	0.020	0.0180	90	59-139
Trichloroethene	0.020	0.0175	88	62-137

SCOEPA00019581

NORTH CREEK ANALYTICAL

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East 11115 Montgomery, Suite B, Spokane, WA 99206-4779 (509) 924-9200 FAX 924-9290
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202

CHAIN OF CUSTODY REPORT

CLIENT: Wacker Silitronic

ADDRESS: 7200 N.W. FRONT AVE
Portland OR

PHONE: 243-2020 x-374 FAX: 241-7599

PROJECT NAME: FAB-2

PROJECT NUMBER: Box, 35+36

SAMPLED BY: Jim Long, Dianne Mullan

REPORT TO: Dianne & Mullan

BILLING TO:

P.O. NUMBER: 31002

NCA QUOTE #:

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: ~~10~~ 5 3 2 1

(Please Select One)

Fuels & Hydrocarbon Analyses: ~~5~~ 3 2 1

** Turnaround Requests less than standard will incur Rush Charg*

FAX RESULTS BY :

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	TCLP 8240	TPH-D	COMMENTS & PRESERVATIVES USED	NCA SAMPLE NUMBER
1. 95-548-Box-35	3-1-95/ 1145	S	1	X	X	Samples filed on ice	P503006-1
2.							
3. 95-549-Box-36	3-1-95/ 1155	S	1	X	X		P503007-1
4.							
5.							
6.							
7.							
8.							
9.							
10.							

RELINQUISHED BY: Dianne Mullan	DATE: 3-1-95	RECEIVED BY: Sara McClurg	DATE: 3-1-95
PRINT NAME: Dianne Mullan FIRM: Wacker S. Itronic	TIME: 1440	PRINT NAME: Sara McClurg FIRM: NCA	TIME: 1440
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
PRINT NAME: FIRM:	TIME:	PRINT NAME: FIRM:	TIME:

ADDITIONAL REMARKS:

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SCOEPA00019582

SAMPLES SENT TO OUTSIDE LABORATORY
FAB-2

1. WSC#: 95- 549

2. Date/Time of Sample: 3-1-95 / 1155

3. Name of Sampler: Jim Long, Dianne Mullan

4. Sample Discription: Drop Box 36 ID# 910215

Other _____

5. Sent To: X North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

6. Analyses Required: JCLP-8240 TPH-D

7. Chain of Custody Submitted; Yes No

8. Purchase Order Number: 31002

9. Final Results Received On: _____

10. Additional Notes; _____

TJR 15 Nov 91
TJR 01 Nov 91
DEM 05 Jan 95

SAMPLES SENT TO OUTSIDE LABORATORY
FAB-2

1. WSC#: 95- 550

2. Date/Time of Sample: 3-2-95 / 1200

3. Name of Sampler: Dianne Mullen

4. Sample Discription: Drop Box 37 ID# 168

Other _____

5. Sent To: X North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

6. Analyses Required: TCLP - 8240 - TPH-D

7. Chain of Custody Submitted; Yes No

8. Purchase Order Number: 31002

9. Final Results Received On: _____

10. Additional Notes; _____

TJR 15 Nov 91
TJR 01 Nov 91
DEM 05 Jan 95

NORTH CREEK ANALYTICAL

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9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202

CHAIN OF CUSTODY REPORT

CLIENT: Wacker Siltronic
ADDRESS: 7200 N.W. Front Ave
Portland, OR
PHONE: 243-2020 X-374 FAX: 241-7599

REPORT TO: Dianne Mullan
BILLING TO:
P.O. NUMBER: 31002
NCA QUOTE #:

PROJECT NAME: FAB-2
PROJECT NUMBER: Box-37, 38
SAMPLED BY: Dianne Mullan, Jim Long

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: [10] [5] [3] [2] [1]

(Please Select One)

Fuels & Hydrocarbon Analyses: [5] [3] [2] [1]

** Turnaround Requests less than standard will incur Rush Charges.*

FAX RESULTS BY :

	SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	Analysis Request: JCLP-8240	TPH-D	COMMENTS & PRESERVATIVES USED	NCA SAMPLE NUMBER
1.	95-550-Box 37	3-2-95/1200	S	1	X	X	Sample Melted	P503027-1
(2.)	95-551-Box-38	3-2-95/1220	S	1	X	X		P503028-1
3.								
4.								
5.								
6.								
7.								
8.								
9.								
10.								

RELINQUISHED BY: Dianne E Mullan	DATE: 3-2-95	RECEIVED BY: EK Schmeltzer	DATE: 3-2-95
PRINT NAME: Dianne Mullan FIRM: Wacker Siltronic	TIME: 1420	PRINT NAME: FIRM: NCA	TIME: 1425
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
PRINT NAME: FIRM:	TIME:	PRINT NAME: FIRM:	TIME:

ADDITIONAL REMARKS:
(1) 95-551-Box-38 is a 1 day turnaround.

PAGE 1 OF 1

COC Rev 6, 10/94

SCOEPA00019585

NORTH CREEK ANALYTICAL

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March 13, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

RE: JOB # BOX-37,38
P.O.# 31002
PROJECT - FAB-2

Enclosed are test results for your samples received in this lab on Mar. 02, 1995. For your reference, these analyses have been assigned our NCA # P503027.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

This report will be accompanied by a separate Quality Control Data Report, unless omitted by client request.

Please call if you have any questions.

Respectfully,

Howard Holmes
Project Manager

NORTH CREEK ANALYTICAL

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Accuracy is measured by percent recovery as in:

$$\% \text{ Recovery} = \frac{\text{(Measured Concentration)}}{\text{(Actual Concentration)}} \times 100$$

Precision is measured using duplicate tests by relative percent difference.

$$\text{RPD} = \frac{\text{(Result of Test 1 - Result of Test 2)}}{\text{(Result of Test 1 + Result of Test 2)/2}} \times 100$$

If you should have any questions concerning this report, please contact me.

Sincerely,

Howard Holmes
Project Manager

SCOEPA00019587

NORTH CREEK ANALYTICAL

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TCLP VOC's per EPA 8240

Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P503027
Matrix: soil
Sampled: 03/02/95
Received: 03/02/95

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-550-Box 37	P503027-1	Benzene	ND	0.010	03/07/95	03/07/95
		Carbon Tetrachloride	ND	0.010		
		Chlorobenzene	ND	0.010		
		Chloroform	ND	0.010		
		1,4-Dichlorobenzene	ND	0.010		
		1,2-Dichloroethane	ND	0.010		
		1,1-Dichloroethene	ND	0.010		
		Methyl Ethyl Ketone	ND	0.13		
		Tetrachloroethene	ND	0.010		
		Trichloroethene	ND	0.010		
		Vinyl Chloride	ND	0.025		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019588

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SURROGATE RECOVERIES (%)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P503027
Received: 03/02/1995

Sample Name	Analyte	Result	Control Limits
TPH-D per Oregon DEQ			
95-550-Box 37	1-Chlorooctadecane	108	50-150
TCLP VOC's per EPA 1311, 8240			
95-550-Box 37	4-Bromofluorobenzene	95	74-121
	1,2-Dichloroethane-d4	87	70-121
	Toluene-d8	97	81-117

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019589

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March 13, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

Re: Quality Control Data
JOB # BOX-37,38
P.O.# 31002
PROJECT - FAB-2

NCA project number P503027.

Note: Surrogate Recoveries are included in the final report.

QUALITY CONTROL DEFINITIONS

METHOD BLANK RESULTS

The method blank is an analyte-free matrix which is carried through the same analytical process as the samples. It is used to document contamination that may result from the analytical process.

SURROGATE STANDARD

A surrogate standard (i.e., a chemical compound not expected to occur in an environmental sample) is added to each sample, blank, and matrix spike sample just prior to extraction or processing. The recovery of the surrogate standard is used to monitor for unusual matrix effects, gross sample processing errors, etc. Surrogate recovery is evaluated for acceptance by determining whether the measured concentration falls within accepted limits.

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TPH-D per Oregon DEQ
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P503027
Matrix: soil
Sampled: 03/02/95
Received: 03/02/95

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-550-Box 37	P503027-1	Diesel/related	270	100	03/03/95	03/03/95

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019591

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BATCH QUALITY CONTROL RESULTS
TPH-D per Oregon DEQ

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P503027
Received: 03/02/1995

METHOD BLANK
Batch # FC95006a
Results In mg/kg (ppm)

Compound	Result	MRL
Diesel/related	ND	25
Date Prepared	03/03/1995	
Date Analyzed	03/06/1995	

Surrogate Recovery (%)	Result	Control Limit
1-Chlorooctadecane	94	50-150

DUPLICATE
Batch # FC95006a
Results In mg/kg (ppm)
Duplicate ID P503027-1

Compound	Sample Conc	Dup Conc	RPD	QC Limit RPD
Diesel/related	270	280	3.6	50

LABORATORY CONTROL SAMPLE
Batch # FC95006a
Results In mg/kg (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Diesel/related	120	140	117	50-150

SCOEPA00019592

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P503027
Received: 03/02/1995

METHOD BLANK
Batch # VS95009b
Results In mg/kg (ppm)

Compound	Result	MRL
Benzene	ND	0.0020
Carbon Tetrachloride	ND	0.0020
Chlorobenzene	ND	0.0020
Chloroform	ND	0.0020
1,4-Dichlorobenzene	ND	0.0020
1,2-Dichloroethane	ND	0.0020
1,1-Dichloroethene	ND	0.0020
Methyl Ethyl Ketone	ND	0.025
Tetrachloroethene	ND	0.0020
Trichloroethene	ND	0.0020
Vinyl Chloride	ND	0.0050
Date Prepared	03/07/1995	
Date Analyzed	03/07/1995	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	98	74-121
1,2-Dichloroethane-d4	87	70-121
Toluene-d8	100	81-117

SCOEPA00019593

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P503027
Received: 03/02/1995

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # VS95009a **Spike ID P502318-11**
Results In mg/kg (ppm0

Compound	Spike Added	Sample Conc	MS Conc	MS %Rec
Benzene	0.020	ND	0.0187	94
Chlorobenzene	0.020	ND	0.0192	96
1,1-Dichloroethene	0.020	ND	0.0172	86
Toluene	0.020	ND	0.0192	96
Trichloroethene	0.020	ND	0.0188	94

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
Benzene	0.020	0.0188	94	0	21	66-142
Chlorobenzene	0.020	0.0194	97	1.0	21	60-133
1,1-Dichloroethene	0.020	0.0176	88	2.3	22	59-172
Toluene	0.020	0.0191	96	0	21	59-139
Trichloroethene	0.020	0.0189	95	1.1	24	62-137

LABORATORY CONTROL SAMPLE
Batch # VS95009b
Results In mg/kg (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Benzene	0.020	0.0187	94	66-142
Chlorobenzene	0.020	0.0198	99	60-133
1,1-Dichloroethene	0.020	0.0168	84	59-172
Toluene	0.020	0.0194	97	59-139
Trichloroethene	0.020	0.0190	95	62-137

SCOEPA00019594

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9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202

CHAIN OF CUSTODY REPORT

CLIENT: Wacker Siltronic
ADDRESS: 7200 N.W. Front Ave
Portland, OR
PHONE: 243-2020 X-374 FAX: 241-7599

REPORT TO: Dianne Mullan
BILLING TO:
P.O. NUMBER: 31002
NCA QUOTE #:

PROJECT NAME: FAB-2
PROJECT NUMBER: Box-37, 38
SAMPLED BY: Dianne Mullan, Jim Long

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: [10] [5] [3] [2] [1]

(Please Select One)

Fuels & Hydrocarbon Analyses: [5] [3] [2] [1]

** Turnaround Requests less than standard will incur Rush Charg*

FAX RESULTS BY :

	SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	Analysis Request: 2CLP-8240	TPH-D	COMMENTS & PRESERVATIVES USED	NCA SAMPLE NUMBER
1.	95-550-Box 37	3-2-95/1200	S	1	X	X	Sample Melted	P503027-1
2.	95-551-Box-38	3-2-95/1220	S	1	X	X		P503028-1
3.								
4.								
5.								
6.								
7.								
8.								
9.								
10.								

RELINQUISHED BY: Dianne E Mullan	DATE: 3-2-95	RECEIVED BY: EK Schmeltzer	DATE: 3-2-95
PRINT NAME: Dianne Mullan FIRM: Wacker Siltronic	TIME: 1420	PRINT NAME: FIRM: NCA	TIME: 1425
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
PRINT NAME: FIRM:	TIME:	PRINT NAME: FIRM:	TIME:

ADDITIONAL REMARKS:
(2) 95-551-Box-38 is a 1 day Turnaround,

PAGE 1 OF 1

COC Rev 6, 10/94

SCOEPA00019595

SAMPLES SENT TO OUTSIDE LABORATORY
FAB-2

1. WSC#: 95- 5551

2. Date/Time of Sample: 3-2-95 / 1220

3. Name of Sampler: Dianne Mullan, Jim Long

4. Sample Discription: Drop Box 38 ID# 135

Other _____

5. Sent To: X North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

6. Analyses Required: TCLP-8240 TPH-D

7. Chain of Custody Submitted: Yes No

8. Purchase Order Number: 31002

9. Final Results Received On: _____

10. Additional Notes; _____

TJR 15 Nov 91
TJR 01 Nov 91
DEM 05 Jan 95

NORTH CREEK ANALYTICAL

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9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202

CHAIN OF CUSTODY REPORT

CLIENT: Wacker Siltronic
ADDRESS: 7200 N.W. Front Ave
Portland OR 97283
PHONE: 243-2020 x-374 FAX: 241-7599

REPORT TO: Dianne E. Mullan
BILLING TO:
P.O. NUMBER: 31002
NCA QUOTE #:

TURNAROUND REQUEST in Business Days *
Organic & Inorganic Analyses: [10] [5] [3] [2] [1]
(Please Select One)
Fuels & Hydrocarbon Analyses: [5] [3] [2] [1]
* Turnaround Requests less than standard will incur Rush Charges.
FAX RESULTS BY :

PROJECT NAME: FAB-2
PROJECT NUMBER: BOX-39, 40, 41
SAMPLED BY: Dianne Mullan, Sandra Archer

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	TCLP 8240	TPH-D	BTEX	COMMENTS & PRESERVATIVES USED	NCA SAMPLE NUMBER
1. 95-552-BOX-39	3-15-95/1000	S	1	X	X	X		P503181
2. 95-553-BOX-40	3-15-95/1015	S	1	X	X	X	All samples	P503182
3. 95-554-BOX-41	3-15-95/1020	S	1	X	X	X	held on	P503183
4.							ice	
5.								
6.								
7.								
8.								
9.								
10.								

RELINQUISHED BY: Dianne Mullan	DATE: 3-15-95	RECEIVED BY: Sara Mc Clurg	DATE: 3/15/95
PRINT NAME: Dianne Mullan FIRM: Wacker Siltronic	TIME: 1340	PRINT NAME: Sara Mc Clurg FIRM: NCA	TIME: 1340
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
PRINT NAME: FIRM:	TIME:	PRINT NAME: FIRM:	TIME:

ADDITIONAL REMARKS:

PAGE OF

COC Rev 6, 10/94

SCOEPA00019597

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March 24, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

RE: JOB # BOX-39,40,41
P.O.# 31002
PROJECT - FAB-2

Enclosed are test results for your samples received in this lab on Mar. 15, 1995. For your reference, these analyses have been assigned our NCA # P503181.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

This report will be accompanied by a separate Quality Control Data Report, unless omitted by client request.

Please call if you have any questions.

Respectfully,

Howard Holmes
Project Manager

NORTH CREEK ANALYTICAL

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TPH-D per Oregon DEQ
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P503181
Matrix: soil
Sampled: 03/15/95
Received: 03/15/95

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-552-Box-39	P503181-1	Diesel/related	280	100	03/16/95	03/16/95

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019599

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BTEX per EPA 8020
Results In ug/kg (ppb)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P503181
Matrix: soil
Sampled: 03/15/95
Received: 03/15/95

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-552-Box-39	P503181-1	Benzene	1800	50	03/16/95	03/17/95
		Toluene	300	50		
		Ethylbenzene	6100	50		
		Xylene (total)	13000	50		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

NORTH CREEK ANALYTICAL
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TCLP VOC's per EPA 8240
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P503181
Matrix: soil
Received: 03/15/95
Sampled: 03/15/95
Prepared: 03/16/95
Analyzed: 03/17/95

Client ID	Lab ID	Analyte	Result	MRL
95-552-Box-39	P503181-1	Benzene	1.6	0.25
		Carbon Tetrachloride	ND	0.25
		Chlorobenzene	ND	0.25
		Chloroform	ND	0.25
		1,4-Dichlorobenzene	ND	0.25
		1,2-Dichloroethane	ND	0.25
		1,1-Dichloroethene	ND	0.25
		Methyl Ethyl Ketone	ND	3.1
		Tetrachloroethene	ND	0.25
		Trichloroethene	ND	0.25
		Vinyl Chloride	ND	0.63

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019601

NORTH CREEK ANALYTICAL
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SURROGATE RECOVERIES (%)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P503181
Received: 03/15/1995

Sample Name	Analyte	Result	Control Limits
TPH-D per Oregon DEQ			
95-552-Box-39	1-Chlorooctadecane	76	50-150
BTEX per EPA 8020			
95-552-Box-39	4-Bromofluorobenzene	102	63-126
TCLP VOC's per EPA 8240			
95-552-Box-39	4-Bromofluorobenzene	95	74-121
	1,2-Dichloroethane-d4	106	70-121
	Toluene-d8	99	81-117

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019602

NORTH CREEK ANALYTICAL

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

March 24, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

Re: Quality Control Data
JOB # BOX-39,40,41
P.O.# 31002
PROJECT - FAB-2

NCA project number P503181.

Note: Surrogate Recoveries are included in the final report.

QUALITY CONTROL DEFINITIONS

METHOD BLANK RESULTS

The method blank is an analyte-free matrix which is carried through the same analytical process as the samples. It is used to document contamination that may result from the analytical process.

SURROGATE STANDARD

A surrogate standard (i.e., a chemical compound not expected to occur in an environmental sample) is added to each sample, blank, and matrix spike sample just prior to extraction or processing. The recovery of the surrogate standard is used to monitor for unusual matrix effects, gross sample processing errors, etc. Surrogate recovery is evaluated for acceptance by determining whether the measured concentration falls within accepted limits.

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Accuracy is measured by percent recovery as in:

$$\% \text{ Recovery} = \frac{\text{(Measured Concentration)}}{\text{(Actual Concentration)}} \times 100$$

Precision is measured using duplicate tests by relative percent difference.

$$\text{RPD} = \frac{\text{(Result of Test 1 - Result of Test 2)}}{\text{(Result of Test 1 + Result of Test 2)/2}} \times 100$$

If you should have any questions concerning this report, please contact me.

Sincerely,

Howard Holmes
Project Manager

SCOEPA00019604

NORTH CREEK ANALYTICAL
18939 120th Avenue N.E., Suite 101 • Bothell, WA 98011-9508 (206) 481-9200 • FAX 485-2992
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BATCH QUALITY CONTROL RESULTS
TPH-D per Oregon DEQ

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P503181
Received: 03/15/1995

METHOD BLANK
Batch # FC95006d
Results In mg/kg (ppm)

Compound	Result	MRL
Diesel/related	ND	25
Date Prepared	03/16/1995	
Date Analyzed	03/16/1995	

Surrogate Recovery (%)	Result	Control Limit
1-Chlorooctadecane	84	50-150

DUPLICATE
Batch # FC95006d
Results In mg/kg (ppm)
Duplicate ID P503195-1

Compound	Sample Conc	Dup Conc	RPD	QC Limit RPD
Diesel/related	ND	ND	0	50

LABORATORY CONTROL SAMPLE
Batch # FC95006a
Results In mg/kg (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Diesel/related	120	140	117	50-150

SCOEPA00019605

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BATCH QUALITY CONTROL RESULTS
BTEX per EPA 8020

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P503181
Received: 03/15/1995

METHOD BLANK
Batch # BS95007d
Results In ug/kg (ppb)

Compound	Result	MRL
Benzene	ND	13
Toluene	ND	13
Ethylbenzene	ND	13
Xylene (total)	ND	13
Date Prepared	03/16/1995	
Date Analyzed	03/16/1995	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	105	63-126

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # BS95007a **Spike ID P503026-1**
Results In ug/kg (ppb)

Compound	Spike Added	Sample Conc	MS Conc	MS %Rec
Benzene	20	ND	16.1	81
Chlorobenzene	20	ND	13.4	67
Ethylbenzene	20	ND	13.0	65
Toluene	20	ND	14.2	71
o-Xylene	20	ND	12.7	64

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
Benzene	20	16.5	83	2.4	17	56-123
Chlorobenzene	20	13.5	68	1.5	16	53-124
Ethylbenzene	20	13.1	66	1.5	20	45-130
Toluene	20	14.4	72	1.4	24	54-123
o-Xylene	20	12.9	65	1.6	20	50-127

SCOEPA00019606

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BATCH QUALITY CONTROL RESULTS
BTEX per EPA 8020

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P503181
Received: 03/15/1995

LABORATORY CONTROL SAMPLE
Batch # BS95007d
Results In ug/kg (ppb)

Compound	True	Found	% Rec	QC Limit % Rec
Benzene	20	19.3	97	69-138
Chlorobenzene	20	19.1	96	72-137
Ethylbenzene	20	19.5	98	61-141
Toluene	20	18.5	93	53-151
o-Xylene	20	19.4	97	62-144

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P503181
Received: 03/15/1995

METHOD BLANK
Batch # VE95009b
Results In mg/kg (ppm)

Compound	Result	MRL
Benzene	ND	0.25
Carbon Tetrachloride	ND	0.25
Chlorobenzene	ND	0.25
Chloroform	ND	0.25
1,4-Dichlorobenzene	ND	0.25
1,2-Dichloroethane	ND	0.25
1,1-Dichloroethene	ND	0.25
Methyl Ethyl Ketone	ND	3.1
Tetrachloroethene	ND	0.25
Trichloroethene	ND	0.25
Vinyl Chloride	ND	0.63
Date Prepared	03/16/1995	
Date Analyzed	03/16/1995	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	100	74-121
1,2-Dichloroethane-d4	88	70-121
Toluene-d8	101	81-117

SCOEPA00019608

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P503181
Received: 03/15/1995

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # VE95009a
Results In mg/kg (ppm)
Spike ID P503118-1c

Compound Added	Spike Conc	SampleMSMS Conc%Rec
Benzene	2.5	ND2.59104
Chlorobenzene	2.5	ND2.60104
1,1-Dichloroethene	2.5	ND2.4899
Toluene	2.5	ND2.60104
Trichloroethene	2.5	ND2.58103

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
Benzene	2.5	2.54	102	1.9	21	66-142
Chlorobenzene	2.5	2.57	103	0.97	21	60-133
1,1-Dichloroethene	2.5	2.47	99	0	22	59-172
Toluene	2.5	2.57	103	0.97	21	59-139
Trichloroethene	2.5	2.52	101	2.0	24	62-137

LABORATORY CONTROL SAMPLE
Batch # VE95009b
Results In mg/kg (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Benzene	2.5	2.57	103	66-142
Chlorobenzene	2.5	2.49	100	60-133
1,1-Dichloroethene	2.5	2.50	100	59-172
Toluene	2.5	2.58	103	59-139
Trichloroethene	2.5	2.52	101	62-137

SCOEPA00019609

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CHAIN OF CUSTODY REPORT

CLIENT: Wacker Siltronic
ADDRESS: 7200 N.W. Front Ave
Portland, OR 97283
PHONE: 243-2020 X-374 FAX: 241-7599

PROJECT NAME: FAB-2
PROJECT NUMBER: Boxes
SAMPLED BY: Dianne Mullan, Justin Darr

REPORT TO: Dianne Mullan
BILLING TO:
P.O. NUMBER: 31002
NCA QUOTE #:

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: ~~10~~ 5 3 2 1

(Please Select One)

Fuels & Hydrocarbon Analyses: ~~5~~ 3 2 1

** Turnaround Requests less than standard will incur Rush Charges.*

FAX RESULTS BY :

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	TCLP 8240	TPH-D							COMMENTS & PRESERVATIVES USED	NCA SAMPLE NUMBER
1. 95-555 - Box - ~~40~~ 42	3-23-95 1300	S	1	X	X							Samples filed on ice	
2. 95-556 - Box - ~~41~~ 43	3-23-95 1310	S	1	X	X								
3. 95-557 - Box - ~~42~~ 44	3-23-95 1320	S	1	X	X								
4. 95-558 45	3-24-95 0810	S	1	X	X								
5. 95-559 Box 46	3-24-95 0820	S	1	X	X								
6. 95-560 Box 47	3-23-95 1330	S	1	X	X								
7. 95-561 Box 48	3-23-95 1400	S	1	X	X								
8. 95-562 Box 49	3-23-95 1415	S	1	X	X								
9. 95-563 Box 50	3-24-95 0830	S	1	X	X								
10. 95-564 Box 51	3-24-95 0840	S	1	X	X								

RELINQUISHED BY: Dianne Mullan	DATE: 3-24-95	RECEIVED BY: Bob Fabrice	DATE: 3/24/95
PRINT NAME: Dianne Mullan FIRM: Wacker Siltronic	TIME: 1507	PRINT NAME: FIRM: NCA	TIME: 1507
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
PRINT NAME: FIRM:	TIME:	PRINT NAME: FIRM:	TIME:

ADDITIONAL REMARKS:

PAGE OF

COC Rev 6, 10/94

SCOEPA00019610

SAMPLES SENT TO OUTSIDE LABORATORY
FAB-2

1. WSC#: 95- 555

2. Date/Time of Sample: 3-23-95 / 1300

3. Name of Sampler: Diaine Mullan

4. Sample Discription: Drop Box 42 ID# 162

Other _____

5. Sent To: X North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

6. Analyses Required: VCLP 8240, TPH-D

7. Chain of Custody Submitted; Yes No

8. Purchase Order Number: 31002

9. Final Results Received On: _____

10. Additional Notes; _____

TJR 15 Nov 91
TJR 01 Nov 91
DEM 05 Jan 95

NORTH CREEK ANALYTICAL

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

RECEIVED APR 14 1995

April 6, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

RE: JOB # BOXES
P.O.# 31002
PROJECT - FAB-2

Enclosed are test results for your samples received in this lab on Mar. 25, 1995. For your reference, these analyses have been assigned our NCA # P503329.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

This report will be accompanied by a separate Quality Control Data Report, unless omitted by client request.

Please call if you have any questions.

Respectfully,

Howard Holmes
Project Manager

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TPH-D per Oregon DEQ
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P503329
Matrix: soil
Sampled: 03/23/95
Received: 03/25/95

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-555-BOX-42	P503329-1	Diesel/related	8,100	100	03/29/95	03/30/95

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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TCLP VOC's per EPA 1311, 8240

Results In mg/L (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P503329
Matrix: soil
Sampled: 03/23/95
Received: 03/25/95

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-555-BOX-42	P503329-1	Benzene	0.34	0.020	03/29/95	03/29/95
		Carbon Tetrachloride	ND	0.020		
		Chlorobenzene	ND	0.020		
		Chloroform	ND	0.020		
		1,4-Dichlorobenzene	ND	0.020		
		1,2-Dichloroethane	ND	0.020		
		1,1-Dichloroethene	ND	0.020		
		Methyl Ethyl Ketone	ND	0.25		
		Tetrachloroethene	ND	0.020		
		Trichloroethene	ND	0.020		
		Vinyl Chloride	ND	0.050		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019614

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

SURROGATE RECOVERIES (%)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P503329
Received: 03/25/1995

Sample Name	Analyte	Result	Control Limits
TPH-D per Oregon DEQ			
95-555-BOX-42	1-Chlorooctadecane	-- *[1]	50-150
TCLP VOC's per EPA 1311, 8240			
95-555-BOX-42	4-Bromofluorobenzene	104	74-121
	1,2-Dichloroethane-d4	90	70-121
	Toluene-d8	98	81-117

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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COMMENTS

Client:	Wacker Siltronic Corporation	NCA Number:	P503329
Project:	FAB-2	**Received:**	03/25/1995

1. Unable to calculate surrogate recovery due to matrix interference.

SCOEPA00019616

SAMPLES SENT TO OUTSIDE LABORATORY
FAB-2

1. WSC#: 95- 556

2. Date/Time of Sample: 3-23-95 / 1310

3. Name of Sampler: Dianne Mullen

4. Sample Discription: Drop Box 43 ID# 176

Other _____

5. Sent To: X North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

6. Analyses Required: VOCs P 8240 TPH-D

7. Chain of Custody Submitted; Yes No

8. Purchase Order Number: 31002

9. Final Results Received On: _____

10. Additional Notes; _____

TJR 15 Nov 91
TJR 01 Nov 91
DEM 05 Jan 95

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RECEIVED APR 14 1995

April 6, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

RE: JOB # Boxes
P.O.# 31002
PROJECT - FAB-2

Enclosed are test results for your samples received in this lab on Mar. 24, 1995. For your reference, these analyses have been assigned our NCA # P503330.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

This report will be accompanied by a separate Quality Control Data Report, unless omitted by client request.

Please call if you have any questions.

Respectfully,

Howard Holmes
Project Manager

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TPH-D per Oregon DEQ
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P503330
Matrix: soil
Sampled: 03/23/95
Received: 03/24/95

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-556-BOX-43	P503330-1	Diesel/related	5,800	100	03/29/95	03/30/95

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019619

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TCLP VOC's per EPA 8240
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P503330
Matrix: soil
Received: 03/24/95
Sampled: 03/23/95
Prepared: 03/27/95
Analyzed: 03/27/95

Client ID	Lab ID	Analyte	Result	MRL
95-556-BOX-43	P503330-1	Benzene	5.4	0.25
		Carbon Tetrachloride	ND	0.25
		Chlorobenzene	ND	0.25
		Chloroform	ND	0.25
		1,4-Dichlorobenzene	ND	0.25
		1,2-Dichloroethane	ND	0.25
		1,1-Dichloroethene	ND	0.25
		Methyl Ethyl Ketone	ND	3.1
		Tetrachloroethene	ND	0.25
		Trichloroethene	ND	0.25
		Vinyl Chloride	ND	0.63

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019620

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SURROGATE RECOVERIES (%)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P503330
Received: 03/24/1995

Sample Name	Analyte	Result	Control Limits
TPH-D per Oregon DEQ			
95-556-BOX-43	1-Chlorooctadecane	-- *[1]	50-150
TCLP VOC's per EPA 8240			
95-556-BOX-43	4-Bromofluorobenzene	96	74-121
	1,2-Dichloroethane-d4	88	70-121
	Toluene-d8	94	81-117

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019621

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COMMENTS

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P503330
Received: 03/24/1995

1. Unable to calculate surrogate recovery due to matrix interference.

SCOEPA00019622

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April 6, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

Re: Quality Control Data
JOB # Boxes
P.O.# 31002
PROJECT - FAB-2

NCA project number P503330.

Note: Surrogate Recoveries are included in the final report.

QUALITY CONTROL DEFINITIONS

METHOD BLANK RESULTS

The method blank is an analyte-free matrix which is carried through the same analytical process as the samples. It is used to document contamination that may result from the analytical process.

SURROGATE STANDARD

A surrogate standard (i.e., a chemical compound not expected to occur in an environmental sample) is added to each sample, blank, and matrix spike sample just prior to extraction or processing. The recovery of the surrogate standard is used to monitor for unusual matrix effects, gross sample processing errors, etc. Surrogate recovery is evaluated for acceptance by determining whether the measured concentration falls within accepted limits.

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Accuracy is measured by percent recovery as in:

$$\% \text{ Recovery} = \frac{(\text{Measured Concentration})}{(\text{Actual Concentration})} \times 100$$

Precision is measured using duplicate tests by relative percent difference.

$$\text{RPD} = \frac{(\text{Result of Test 1} - \text{Result of Test 2})}{(\text{Result of Test 1} + \text{Result of Test 2})/2} \times 100$$

If you should have any questions concerning this report, please contact me.

Sincerely,

Howard Holmes
Project Manager

SCOEPA00019624

NORTH CREEK ANALYTICAL
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BATCH QUALITY CONTROL RESULTS
TPH-D per Oregon DEQ

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P503330
Received: 03/24/95

METHOD BLANK
Batch # FC95008a
Results In mg/kg (ppm)

Compound	Result	MRL
Diesel/related	ND	25
Date Prepared	03/29/95	
Date Analyzed	03/31/95	

Surrogate Recovery (%)	Result	Control Limit
1-Chlorooctadecane	101	50-150

DUPLICATE
Batch # FC95008a
Duplicate ID P503381-1
Results In mg/kg (ppm)

Compound	Sample Conc	Dup Conc	RPD	QC Limit RPD
Diesel/related	780	930	18	50

LABORATORY CONTROL SAMPLE
Batch # FC95008a
Results In mg/kg (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Diesel/related	120	130	108	50-150

SCOEPA00019625

NORTH CREEK ANALYTICAL
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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P503330
Received: 03/24/95

METHOD BLANK
Batch # VE95010c
Results In mg/kg (ppm)

Compound	Result	MRL
Benzene	ND	0.25
Carbon Tetrachloride	ND	0.25
Chlorobenzene	ND	0.25
Chloroform	ND	0.25
1,4-Dichlorobenzene	ND	0.25
1,2-Dichloroethane	ND	0.25
1,1-Dichloroethene	ND	0.25
Methyl Ethyl Ketone	ND	3.1
Tetrachloroethene	ND	0.25
Trichloroethene	ND	0.25
Vinyl Chloride	ND	0.63
Date Prepared	03/27/95	
Date Analyzed	03/27/95	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	99	74-121
1,2-Dichloroethane-d4	92	70-121
Toluene-d8	98	81-117

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # VE95010a **Spike ID P503230-14**
Results In mg/kg (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS %Rec
Benzene	2.5	ND	2.59	104
Chlorobenzene	2.5	ND	2.48	99
1,1-Dichloroethene	2.5	ND	2.77	111
Toluene	2.5	ND	2.48	99
Trichloroethene	2.5	ND	2.44	98

SCOEPA00019626

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P503330
Received: 03/24/95

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
Benzene	2.5	2.64	106	1.9	21	66-142
Chlorobenzene	2.5	2.54	102	3.0	21	60-133
1,1-Dichloroethene	2.5	2.65	106	4.6	22	59-172
Toluene	2.5	2.53	101	2.0	21	59-139
Trichloroethene	2.5	2.47	99	1.0	24	62-137

LABORATORY CONTROL SAMPLE
Batch # VE95010c
Results In mg/kg (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Benzene	2.5	2.61	104	66-142
Chlorobenzene	2.5	2.50	100	60-133
1,1-Dichloroethene	2.5	2.66	106	59-172
Toluene	2.5	2.55	102	59-139
Trichloroethene	2.5	2.50	100	62-137

SCOEPA00019627

SAMPLES SENT TO OUTSIDE LABORATORY
FAB-2

1. WSC#: 95- 557

2. Date/Time of Sample: 3-23-95 / 1320

3. Name of Sampler: Dianne Mullan

4. Sample Discription: Drop Box 4/4 ID# H 17

Other _____

5. Sent To: ✓ North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

___ _____

_____

_____

6. Analyses Required: VOLP-8240 -TPH-D

_____

7. Chain of Custody Submitted; (Yes) No

8. Purchase Order Number: 31002

9. Final Results Received On: _____

10. Additional Notes; _____

_____

_____

_____

_____

TJR 15 Nov 91
TJR 01 Nov 91
DEM 05 Jan 95

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RECEIVED APR 14 1995

April 6, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

RE: JOB # BOXES
P.O.# 31002
PROJECT - FAB-2

Enclosed are test results for your samples received in this lab on Mar. 24, 1995. For your reference, these analyses have been assigned our NCA # P503331.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

This report will be accompanied by a separate Quality Control Data Report, unless omitted by client request.

Please call if you have any questions.

Respectfully,

Howard Holmes
Project Manager

NORTH CREEK ANALYTICAL

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TPH-D per Oregon DEQ
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P503331
Matrix: soil
Sampled: 03/23/95
Received: 03/24/95

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-557-BOX-44	P503331-1	Diesel/related	2,200	100	03/29/95	03/30/95

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019630

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TCLP VOC's per EPA 8240

Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P503331
Matrix: soil
Sampled: 03/23/95
Received: 03/24/95

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-557-BOX-44	P503331-1	Benzene	2.2	0.25	03/27/95	03/27/95
		Carbon Tetrachloride	ND	0.25		
		Chlorobenzene	ND	0.25		
		Chloroform	ND	0.25		
		1,4-Dichlorobenzene	ND	0.25		
		1,2-Dichloroethane	ND	0.25		
		1,1-Dichloroethene	ND	0.25		
		Methyl Ethyl Ketone	ND	3.1		
		Tetrachloroethene	ND	0.25		
		Trichloroethene	ND	0.25		
		Vinyl Chloride	ND	0.63		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019631

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SURROGATE RECOVERIES (%)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P503331
Received: 03/24/1995

Sample Name	Analyte	Result	Control Limits
TPH-D per Oregon DEQ			
95-557-BOX-44	1-Chlorooctadecane	-- *[1]	50-150
TCLP VOC's per EPA 8240			
95-557-BOX-44	4-Bromofluorobenzene	94	74-121
	1,2-Dichloroethane-d4	85	70-121
	Toluene-d8	92	81-117

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019632

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

COMMENTS

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P503331
Received: 03/24/1995

1. Unable to calculate surrogate recovery due to matrix interference.

SCOEPA00019633

NORTH CREEK ANALYTICAL

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April 6, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

Re: Quality Control Data
JOB # BOXES
P.O.# 31002
PROJECT - FAB-2

NCA project number P503331.

Note: Surrogate Recoveries are included in the final report.

QUALITY CONTROL DEFINITIONS

METHOD BLANK RESULTS

The method blank is an analyte-free matrix which is carried through the same analytical process as the samples. It is used to document contamination that may result from the analytical process.

SURROGATE STANDARD

A surrogate standard (i.e., a chemical compound not expected to occur in an environmental sample) is added to each sample, blank, and matrix spike sample just prior to extraction or processing. The recovery of the surrogate standard is used to monitor for unusual matrix effects, gross sample processing errors, etc. Surrogate recovery is evaluated for acceptance by determining whether the measured concentration falls within accepted limits.

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Accuracy is measured by percent recovery as in:

$$\% \text{ Recovery} = \frac{\text{(Measured Concentration)}}{\text{(Actual Concentration)}} \times 100$$

Precision is measured using duplicate tests by relative percent difference.

$$\text{RPD} = \frac{\text{(Result of Test 1 - Result of Test 2)}}{\text{(Result of Test 1 + Result of Test 2)/2}} \times 100$$

If you should have any questions concerning this report, please contact me.

Sincerely,

Howard Holmes
Project Manager

SCOEPA00019635

NORTH CREEK ANALYTICAL
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BATCH QUALITY CONTROL RESULTS
TPH-D per Oregon DEQ

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P503331
Received: 03/24/95

METHOD BLANK
Batch # FC95008a
Results In mg/kg (ppm)

Compound	Result	MRL
Diesel/related	ND	25
Date Prepared	03/29/95	
Date Analyzed	03/31/95	

Surrogate Recovery (%)	Result	Control Limit
1-Chlorooctadecane	101	50-150

DUPLICATE
Batch # FC95008a
Results In mg/kg (ppm)
Duplicate ID P503381-1

Compound	Sample Conc	Dup Conc	RPD	QC Limit RPD
Diesel/related	780	930	18	50

LABORATORY CONTROL SAMPLE
Batch # FC95008a
Results In mg/kg (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Diesel/related	120	130	108	50-150

SCOEPA00019636

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P503331
Received: 03/24/95

METHOD BLANK
Batch # VE95010c
Results In mg/kg (ppm)

Compound	Result	MRL
Benzene	ND	0.25
Carbon Tetrachloride	ND	0.25
Chlorobenzene	ND	0.25
Chloroform	ND	0.25
1,4-Dichlorobenzene	ND	0.25
1,2-Dichloroethane	ND	0.25
1,1-Dichloroethene	ND	0.25
Methyl Ethyl Ketone	ND	3.1
Tetrachloroethene	ND	0.25
Trichloroethene	ND	0.25
Vinyl Chloride	ND	0.63
Date Prepared	03/27/95	
Date Analyzed	03/27/95	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	99	74-121
1,2-Dichloroethane-d4	92	70-121
Toluene-d8	98	81-117

SCOEPA00019637

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P503331
Received: 03/24/95

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # VE95010a **Spike ID P503230-14**
Results In mg/kg (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS %Rec
Benzene	2.5	ND	2.59	104
Chlorobenzene	2.5	ND	2.48	99
1,1-Dichloroethene	2.5	ND	2.77	111
Toluene	2.5	ND	2.48	99
Trichloroethene	2.5	ND	2.44	98

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
Benzene	2.5	2.64	106	1.9	21	66-142
Chlorobenzene	2.5	2.54	102	3.0	21	60-133
1,1-Dichloroethene	2.5	2.65	106	4.6	22	59-172
Toluene	2.5	2.53	101	2.0	21	59-139
Trichloroethene	2.5	2.47	99	1.0	24	62-137

LABORATORY CONTROL SAMPLE
Batch # VE95010c
Results In mg/kg (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Benzene	2.5	2.61	104	66-142
Chlorobenzene	2.5	2.50	100	60-133
1,1-Dichloroethene	2.5	2.66	106	59-172
Toluene	2.5	2.55	102	59-139
Trichloroethene	2.5	2.50	100	62-137

SCOEPA00019638

SAMPLES SENT TO OUTSIDE LABORATORY
FAB-2

1. WSC#: 95- 558

2. Date/Time of Sample: 3-24-95 / 0810

3. Name of Sampler: Justin Dewar Dianne Mullen

4. Sample Discription: Drop Box 45 ID# H3

Other _____

5. Sent To: X North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

6. Analyses Required: OCLP 8240 TPH-D

7. Chain of Custody Submitted; Yes No

8. Purchase Order Number: 31002

9. Final Results Received On: _____

10. Additional Notes; _____

TJR 15 Nov 91
TJR 01 Nov 91
DEM 05 Jan 95

NORTH CREEK ANALYTICAL

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April 6, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

RE: JOB # BOXES
P.O.# 31002
PROJECT - FAB-2

Enclosed are test results for your samples received in this lab on Mar. 24, 1995. For your reference, these analyses have been assigned our NCA # P503332.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

This report will be accompanied by a separate Quality Control Data Report, unless omitted by client request.

Please call if you have any questions.

Respectfully,

Howard Holmes
Project Manager

NORTH CREEK ANALYTICAL

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TPH-D per Oregon DEQ
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P503332
Matrix: soil
Sampled: 03/23/95
Received: 03/24/95

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-558 BOX 45	P503332-1	Diesel/related	6,300	100	03/29/95	03/30/95

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019641

NORTH CREEK ANALYTICAL

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TCLP VOC's per EPA 8240
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P503332
Matrix: soil
Sampled: 03/23/95
Received: 03/24/95

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-558 BOX 45	P503332-1	Benzene	5.6	0.25	03/27/95	03/27/95
		Carbon Tetrachloride	ND	0.25		
		Chlorobenzene	ND	0.25		
		Chloroform	ND	0.25		
		1,4-Dichlorobenzene	ND	0.25		
		1,2-Dichloroethane	ND	0.25		
		1,1-Dichloroethene	ND	0.25		
		Methyl Ethyl Ketone	ND	3.1		
		Tetrachloroethene	ND	0.25		
		Trichloroethene	ND	0.25		
		Vinyl Chloride	ND	0.63		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019642

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SURROGATE RECOVERIES (%)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P503332
Received: 03/24/1995

Sample Name	Analyte	Result	Control Limits
TPH-D per Oregon DEQ			
95-558 BOX 45	1-Chlorooctadecane	-- *[1]	50-150
TCLP VOC's per EPA 8240			
95-558 BOX 45	4-Bromofluorobenzene	94	74-121
	1,2-Dichloroethane-d4	85	70-121
	Toluene-d8	94	81-117

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

NORTH CREEK ANALYTICAL

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COMMENTS

Client:	Wacker Siltronic Corporation	NCA Number:	P503332
Project:	FAB-2	**Received:**	03/24/1995

1. Unable to calculate surrogate recovery due to matrix interference.

SCOEPA00019644

NORTH CREEK ANALYTICAL

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April 6, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

Re: Quality Control Data
JOB # BOXES
P.O.# 31002
PROJECT - FAB-2

NCA project number P503332.

Note: Surrogate Recoveries are included in the final report.

QUALITY CONTROL DEFINITIONS

METHOD BLANK RESULTS

The method blank is an analyte-free matrix which is carried through the same analytical process as the samples. It is used to document contamination that may result from the analytical process.

SURROGATE STANDARD

A surrogate standard (i.e., a chemical compound not expected to occur in an environmental sample) is added to each sample, blank, and matrix spike sample just prior to extraction or processing. The recovery of the surrogate standard is used to monitor for unusual matrix effects, gross sample processing errors, etc. Surrogate recovery is evaluated for acceptance by determining whether the measured concentration falls within accepted limits.

NORTH CREEK ANALYTICAL

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Accuracy is measured by percent recovery as in:

$$\% \text{ Recovery} = \frac{\text{(Measured Concentration)}}{\text{(Actual Concentration)}} \times 100$$

Precision is measured using duplicate tests by relative percent difference.

$$\text{RPD} = \frac{\text{(Result of Test 1 - Result of Test 2)}}{\text{(Result of Test 1 + Result of Test 2)/2}} \times 100$$

If you should have any questions concerning this report, please contact me.

Sincerely,

Howard Holmes
Project Manager

SCOEPA00019646

NORTH CREEK ANALYTICAL
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BATCH QUALITY CONTROL RESULTS
TPH-D per Oregon DEQ

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P503332
Received: 03/24/95

METHOD BLANK
Batch # FC95008a
Results In mg/kg (ppm)

Compound	Result	MRL
Diesel/related	ND	25
Date Prepared	03/29/95	
Date Analyzed	03/31/95	

Surrogate Recovery (%)	Result	Control Limit
1-Chlorooctadecane	101	50-150

DUPLICATE
Batch # FC95008a
Results In mg/kg (ppm)
Duplicate ID P503381-1

Compound	Sample Conc	Dup Conc	RPD	QC Limit RPD
Diesel/related	780	930	18	50

LABORATORY CONTROL SAMPLE
Batch # FC95008a
Results In mg/kg (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Diesel/related	120	130	108	50-150

SCOEPA00019647

NORTH CREEK ANALYTICAL
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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P503332
Received: 03/24/95

METHOD BLANK
Batch # VE95010c
Results In mg/kg (ppm)

Compound	Result	MRL
Benzene	ND	0.25
Carbon Tetrachloride	ND	0.25
Chlorobenzene	ND	0.25
Chloroform	ND	0.25
1,4-Dichlorobenzene	ND	0.25
1,2-Dichloroethane	ND	0.25
1,1-Dichloroethene	ND	0.25
Methyl Ethyl Ketone	ND	3.1
Tetrachloroethene	ND	0.25
Trichloroethene	ND	0.25
Vinyl Chloride	ND	0.63
Date Prepared	03/27/95	
Date Analyzed	03/27/95	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	99	74-121
1,2-Dichloroethane-d4	92	70-121
Toluene-d8	98	81-117

SCOEPA00019648

NORTH CREEK ANALYTICAL

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P503332
Received: 03/24/95

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # VE95010a **Spike ID P503230-14**
Results In mg/kg (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS %Rec
Benzene	2.5	ND	2.59	104
Chlorobenzene	2.5	ND	2.48	99
1,1-Dichloroethene	2.5	ND	2.77	111
Toluene	2.5	ND	2.48	99
Trichloroethene	2.5	ND	2.44	98

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
Benzene	2.5	2.64	106	1.9	21	66-142
Chlorobenzene	2.5	2.54	102	3.0	21	60-133
1,1-Dichloroethene	2.5	2.65	106	4.6	22	59-172
Toluene	2.5	2.53	101	2.0	21	59-139
Trichloroethene	2.5	2.47	99	1.0	24	62-137

LABORATORY CONTROL SAMPLE
Batch # VE95010c
Results In mg/kg (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Benzene	2.5	2.61	104	66-142
Chlorobenzene	2.5	2.50	100	60-133
1,1-Dichloroethene	2.5	2.66	106	59-172
Toluene	2.5	2.55	102	59-139
Trichloroethene	2.5	2.50	100	62-137

SCOEPA00019649

SAMPLES SENT TO OUTSIDE LABORATORY
FAB-2

1. WSC#: 95- 559

2. Date/Time of Sample: 3-23-95 / 0820

3. Name of Sampler: Dianne Mullan Justin Darr

4. Sample Discription: Drop Box 46 ID# H-7

Other _____

5. Sent To: X North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

6. Analyses Required: TCLP 8240 TPH-D

7. Chain of Custody Submitted; Yes No

8. Purchase Order Number: 31002

9. Final Results Received On: _____

10. Additional Notes; _____

TJR 15 Nov 91
TJR 01 Nov 91
DEM 05 Jan 95

SAMPLES SENT TO OUTSIDE LABORATORY
FAB-2

1. WSC#: 95- 560

2. Date/Time of Sample: 3-23-95 / 1330

3. Name of Sampler: Dianne Mullen, Justin Durr

4. Sample Discription: Drop Box 47 ID# 164

Other _____

5. Sent To: X North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

6. Analyses Required: JCLP 8240, TPH-D

7. Chain of Custody Submitted; (Yes) No

8. Purchase Order Number: 31002

9. Final Results Received On: _____

10. Additional Notes; _____

TJR 15 Nov 91
TJR 01 Nov 91
DEM 05 Jan 95

SAMPLES SENT TO OUTSIDE LABORATORY
FAB-2

1. WSC#: 95- 561

2. Date/Time of Sample: 3-23-95 / 1400

3. Name of Sampler: Justin Darr, Dianne Mullen

4. Sample Discription: Drop Box 48 ID# 174

Other _____

5. Sent To: X North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

6. Analyses Required: TCLP 8240, TPH-D

7. Chain of Custody Submitted; Yes No

8. Purchase Order Number: 31002

9. Final Results Received On: _____

10. Additional Notes; _____

TJR 15 Nov 91
TJR 01 Nov 91
DEM 05 Jan 95

SAMPLES SENT TO OUTSIDE LABORATORY
FAB-2

1. WSC#: 95- 562

2. Date/Time of Sample: 3-23-95 / 1415

3. Name of Sampler: Justin Darr, Dianne Mullan

4. Sample Discription: Drop Box 49 ID# H4

Other _____

5. Sent To: X North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

6. Analyses Required: TCLP 8240 - TPH-D

7. Chain of Custody Submitted; (Yes) No

8. Purchase Order Number: 31002

9. Final Results Received On: _____

10. Additional Notes; _____

TJR 15 Nov 91
TJR 01 Nov 91
DEM 05 Jan 95

SAMPLES SENT TO OUTSIDE LABORATORY
FAB-2

1. WSC#: 95- 563

2. Date/Time of Sample: 3-24-95 / 0830

3. Name of Sampler: Dianne Mullan, Justin Darr

4. Sample Discription: Drop Box 50 ID# 118

Other _____

5. Sent To: X North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

6. Analyses Required: JCLP 8240, TPH-D

7. Chain of Custody Submitted; Yes No

8. Purchase Order Number: 31002

9. Final Results Received On: _____

10. Additional Notes; _____

TJR 15 Nov 91
TJR 01 Nov 91
DEM 05 Jan 95

SAMPLES SENT TO OUTSIDE LABORATORY
FAB-2

1. WSC#: 95- 564

2. Date/Time of Sample: 3-24-95 / 0830

3. Name of Sampler: Dianne Mullan, Justin Darr

4. Sample Discription: Drop Box 51 ID# 120

   Other _____

5. Sent To: X North Creek Analytical
   (formerly Pacific Environmental Laboratory, Inc.)
   9405 SW Nimbus Avenue
   Beaverton, Oregon 97005
   643-9200

6. Analyses Required: TCLP 8240, TPH-D

7. Chain of Custody Submitted; Yes No

8. Purchase Order Number: 31002

9. Final Results Received On: _____

10. Additional Notes; _____

TJR 15 Nov 91
TJR 01 Nov 91
DEM 05 Jan 95

SAMPLES SENT TO OUTSIDE LABORATORY
FAB-2

1. WSC#: 95-565

2. Date/Time of Sample: 3-27-95 / 1200

3. Name of Sampler: Jim Long, Duane Mullan

4. Sample Discription: Drop Box 52 ID#

Other

5. Sent To: X North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

6. Analyses Required: TCLP 8240, TPH-D

7. Chain of Custody Submitted; Yes No

8. Purchase Order Number: 31002

9. Final Results Received On:

10. Additional Notes;

TJR 15 Nov 91
TJR 01 Nov 91
DEM 05 Jan 95

NORTH CREEK ANALYTICAL

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9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202

CHAIN OF CUSTODY REPORT

CLIENT: Wacker Siltronic
ADDRESS: 7200 N. W. FRONT AVE
Portland, OR 97283
PHONE: 243-2020 X-374 FAX: 241-7599

REPORT TO: Dianne Mullan
BILLING TO:
P.O. NUMBER: 31002
NCA QUOTE #:

PROJECT NAME: FAB-2
PROJECT NUMBER: Boxes
SAMPLED BY: Dianne E Mullan, Jim Long

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: [X] 10 [ ] 5 [ ] 3 [ ] 2 [ ] 1

(Please Select One)

Fuels & Hydrocarbon Analyses: [X] 5 [ ] 3 [ ] 2 [ ] 1

** Turnaround Requests less than standard will incur Rush Charg*

FAX RESULTS BY :

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	Analysis Request: TCLP 8240			TPH-D							COMMENTS & PRESERVATIVES USED	NCA SAMPLE NUMBER
1. 95-565 Box-52	3-27-95/1200	S	1		X		X							Both samples	P503372
2. 95-566 Box-53	3-27-95/1210	S	1		X		X							Sheldon (W).	
3.															
4.															
5.															
6.															
7.															
8.															
9.															
10.															

RELINQUISHED BY: Dianne Mullan	DATE: 3-28-95	RECEIVED BY: Kent D. Patton	DATE: 3/28/95
PRINT NAME: Dianne Mullan FIRM: Wacker Siltronic	TIME: 1110	PRINT NAME: Kent D. Patton FIRM: NCA	TIME: 14:15
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
PRINT NAME: FIRM:	TIME:	PRINT NAME: FIRM:	TIME:

ADDITIONAL REMARKS:

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SCOEPA00019657

NORTH CREEK ANALYTICAL

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9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202

CHAIN OF CUSTODY REPORT

CLIENT: Wacker Siltronic
ADDRESS: 7200 N. W. FRONT AVE
Portland, OR 97283
PHONE: 243-2020 X-374 FAX: 241-7599

REPORT TO: Dianne Mullan
BILLING TO:
P.O. NUMBER: 31002
NCA QUOTE #:

PROJECT NAME: FAB-2
PROJECT NUMBER: Boxes
SAMPLED BY: Dianne E Mullan, Jim Long

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: [X] 10 [ ] 5 [ ] 3 [ ] 2 [ ] 1

(Please Select One)

Fuels & Hydrocarbon Analyses: [X] 5 [ ] 3 [ ] 2 [ ] 1

** Turnaround Requests less than standard will incur Rush Charges.*

FAX RESULTS BY :

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	Analysis Request: JCLP 8240		TPH-D							COMMENTS & PRESERVATIVES USED	NCA SAMPLE NUMBER
1. 95-565 BOX-52	3-27-95/1200	S	1		X		X						Both samples	
2. 95-566 BOX-53	3-27-95/1210	S	1		X		X						held on ice.	
3.														
4.														
5.														
6.														
7.														
8.														
9.														
10.														

RELINQUISHED BY: Dianne Mullan	DATE: 3-28-95	RECEIVED BY: Kent D. Patton	DATE: 3/28/95
PRINT NAME: Dianne Mullan FIRM: Wacker Siltronic	TIME: 1410	PRINT NAME: Kent D. Patton FIRM: NCA	TIME: 14:K
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
PRINT NAME: FIRM:	TIME:	PRINT NAME: FIRM:	TIME:

ADDITIONAL REMARKS:

PAGE OF

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SCOEPA00019658

SAMPLES SENT TO OUTSIDE LABORATORY
FAB-2

1. WSC#: 95-566

2. Date/Time of Sample: 3-27-95 / 1210

3. Name of Sampler: Jim Long, Dianne Mullen

4. Sample Discription: Drop Box 53 ID#

Other

5. Sent To: X North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

6. Analyses Required: TCLP 8240, TPH-D

7. Chain of Custody Submitted; Yes No

8. Purchase Order Number: 31002

9. Final Results Received On:

10. Additional Notes;

TJR 15 Nov 91
TJR 01 Nov 91
DEM 05 Jan 95

SAMPLES SENT TO OUTSIDE LABORATORY
FAB-2

1. WSC#: 95-598

2. Date/Time of Sample: 9-7-95 / 1000

3. Name of Sampler: Paul Wittke, Dianne Mullan

4. Sample Discription: Drop Box 54 ID#

   Other

5. Sent To: X North Creek Analytical
   (formerly Pacific Environmental Laboratory, Inc.)
   9405 SW Nimbus Avenue
   Beaverton, Oregon 97005
   643-9200

6. Analyses Required: Benzene Screen, TPH-D

7. Chain of Custody Submitted; (Yes) No

8. Purchase Order Number: ~~31002~~ 60068

9. Final Results Received On:

10. Additional Notes; 2 day Rush.

TJR 15 Nov 91
TJR 01 Nov 91
DEM 05 Jan 95

NORTH CREEK ANALYTICAL

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Rec'd
20 Sep 95
DM

INVOICE FOR ANALYTICAL SERVICES

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Accounts Payable

Project Manager: Dianne E. Mullan

Project: FAB-2, #BOX-54

Invoice Number: 25090024

Invoice Date: 09/12/95

PO# 60068

Soil, Received 9/7/95

NCA Project #:P509071

QTY	ANALYSES PERFORMED	T.A.T.	UNIT PRICE	NET AMOUNT
1	TPH-Diesel	3 Day	128.00	128.00
1	BTEX Distinction	3 Day	112.00	112.00

COPY

Invoice Total $ 240.00

```
*****************************************
*                                       *
* Remit To: North Creek Analytical, Inc. *
*           18939 - 120th Ave. NE   #101 *
*           Bothell, WA       98011-9508 *
*                                       *
*****************************************
```

TERMS: NET 30 DAYS
PAST DUE INVOICES ARE SUBJECT TO A 1.5% PER MONTH SERVICE CHARGE

NORTH CREEK ANALYTICAL

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September 12, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne E. Mullan

RE: JOB # BOX-54
P.O.# 60068
PROJECT - FAB-2

Enclosed are test results for your samples received in this lab on Sep. 07, 1995. For your reference, these analyses have been assigned our NCA # P509071.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

This report will be accompanied by a separate Quality Control Data Report, unless omitted by client request.

Please call if you have any questions.

Respectfully,

Cindy Hetrick

Cindy Hetrick
Project Manager

NORTH CREEK ANALYTICAL

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TPH-D per Oregon DEQ (C10-C28)
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P509071
Matrix: soil
Sampled: 09/07/95
Received: 09/07/95

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-598	P509071-1	Diesel/Related	1,700	250	09/08/95	09/08/95

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019663

NORTH CREEK ANALYTICAL

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

BTEX per EPA 8020
Results In ug/kg (ppb)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P509071
Matrix: soil
Sampled: 09/07/95
Received: 09/07/95

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-598	P509071-1	Benzene	260	50	09/08/95	09/08/95

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019664

NORTH CREEK ANALYTICAL

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SURROGATE RECOVERIES (%)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P509071
Received: 09/07/1995

Sample Name	Analyte	Result	Control Limits
TPH-D per Oregon DEQ (C10-C28)			
95-598	1-Chlorooctadecane	– *[1]	50-150
BTEX per EPA 8020			
95-598	4-Bromofluorobenzene	93	63-126

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019665

NORTH CREEK ANALYTICAL

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COMMENTS

Client:	Wacker Siltronic Corporation	NCA Number:	P509071
Project:	FAB-2	**Received:**	09/07/1995

1. Unable to calculate surrogate recovery due to high analyte concentration.

SCOEPA00019666

NORTH CREEK ANALYTICAL

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

September 12, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne E. Mullan

Re: Quality Control Data
JOB # BOX-54
P.O.# 60068
PROJECT - FAB-2

NCA project number P509071.

Note: Surrogate Recoveries are included in the final report.

QUALITY CONTROL DEFINITIONS

METHOD BLANK RESULTS

The method blank is an analyte-free matrix which is carried through the same analytical process as the samples. It is used to document contamination that may result from the analytical process.

SURROGATE STANDARD

A surrogate standard (i.e., a chemical compound not expected to occur in an environmental sample) is added to each sample, blank, and matrix spike sample just prior to extraction or processing. The recovery of the surrogate standard is used to monitor for unusual matrix effects, gross sample processing errors, etc. Surrogate recovery is evaluated for acceptance by determining whether the measured concentration falls within accepted limits.

NORTH CREEK ANALYTICAL

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Accuracy is measured by percent recovery as in:

$$\% \text{ Recovery} = \frac{\text{(Measured Concentration)}}{\text{(Actual Concentration)}} \times 100$$

Precision is measured using duplicate tests by relative percent difference.

$$\text{RPD} = \frac{\text{(Result of Test 1 - Result of Test 2)}}{\text{(Result of Test 1 + Result of Test 2)/2}} \times 100$$

If you should have any questions concerning this report, please contact me.

Sincerely,

Cindy Hetrick

Cindy Hetrick
Project Manager

SCOEPA00019668

NORTH CREEK ANALYTICAL

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East 11115 Montgomery, Suite B • Spokane, WA 99206-4776 (509) 924-9200 • FAX 924-9290
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BATCH QUALITY CONTROL RESULTS
TPH-D per Oregon DEQ (C10-C28)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P509071
Received: 09/07/95

METHOD BLANK
Batch # FC95030c
Results In mg/kg (ppm)

Compound	Result	MRL
Diesel/Related	ND	25
Date Prepared	09/08/95	
Date Analyzed	09/08/95	

Surrogate Recovery (%)	Result	Control Limit
1-Chlorooctadecane	85	50-150

DUPLICATE
Batch # FC95030b
Results In mg/kg (ppm)

Duplicate ID P508369-1

Compound	Sample Conc	Dup Conc	RPD	QC Limit RPD
Diesel/related	25	36	37	50

LABORATORY CONTROL SAMPLE
Batch # FC95030a
Results In mg/kg (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Diesel/related	120	120	100	50-150

SCOEPA00019669

NORTH CREEK ANALYTICAL
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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

BATCH QUALITY CONTROL RESULTS
BTEX per EPA 8020

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P509071
Received: 09/07/95

METHOD BLANK
Batch # BS95028d
Results In ug/kg (ppb)

Compound	Result	MRL
Benzene	ND	13
Toluene	ND	13
Ethylbenzene	ND	13
Xylenes (total)	ND	13
Date Prepared	09/08/95	
Date Analyzed	09/08/95	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	93	63-126

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # BS95028a **Spike ID P508305-11**
Results In ug/kg (ppb)

Compound	Spike Added	Sample Conc	MS Conc	MS %Rec
Benzene	20	ND	17.7	89
Chlorobenzene	20	ND	15.4	77
Ethylbenzene	20	ND	14.4	72
Toluene	20	ND	16.5	83
o-Xylene	20	ND	14.2	71

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
Benzene	20	17.6	88	1.1	17	56-123
Chlorobenzene	20	15.2	76	1.3	16	53-124
Ethylbenzene	20	14.0	70	2.8	20	45-130
Toluene	20	16.2	81	2.4	24	54-123
o-Xylene	20	13.9	70	1.4	20	50-127

SCOEPA00019670

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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

BATCH QUALITY CONTROL RESULTS
BTEX per EPA 8020

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P509071
Received: 09/07/95

LABORATORY CONTROL SAMPLE
Batch # BS95028d
Results In ug/kg (ppb)

Compound	True	Found	% Rec	QC Limit % Rec
Benzene	20	17.9	90	69-138
Chlorobenzene	20	18.3	92	72-137
Ethylbenzene	20	18.8	94	61-141
Toluene	20	18.1	91	53-151
o-Xylene	20	18.8	94	62-144

SCOEPA00019671

NORTH CREEK ANALYTICAL

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9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202

CHAIN OF CUSTODY REPORT

CLIENT: Wacker Siltronic
ADDRESS: 7200 N.W. Front Ave
Portland, OR
PHONE: 243-2020 x-7374 FAX: 241-7599

REPORT TO: Dianne E Mullan
BILLING TO:
P.O. NUMBER: 60068
NCA QUOTE #:

TURNAROUND REQUEST in Business Days *
Organic & Inorganic Analyses: 10 | 5 | 3 | 2 | 1
(Please Select One)
Fuels & Hydrocarbon Analyses: 5 | 3 | ~~2~~ | 1
* Turnaround Requests less than standard will incur Rush Charge.
FAX RESULTS BY :

PROJECT NAME: FAB-2
PROJECT NUMBER: BOX-54
SAMPLED BY: Paul Wittke, Dianne Mullan

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	Benzene Screen	TPH-D	COMMENTS & PRESERVATIVES USED	NCA SAMPLE NUMBER
1. 95-598	9-7-95/1000	S	1	X	X	held on ice	P5D9071-1
2.							
3.							
4.							
5.							
6.							
7.							
8.							15.2°C
9.							
10.							

RELINQUISHED BY: Dianne E Mullan DATE: 9-7-95
PRINT NAME: Dianne Mullan FIRM: Wacker Siltronic TIME: 1030
RECEIVED BY: Bob Fabry DATE: 9/7/95
PRINT NAME: FIRM: NCA TIME: 1030

RELINQUISHED BY: Bob Fabry DATE:
PRINT NAME: FIRM: TIME:
RECEIVED BY: Julie Reynolds DATE: 9-7-95
PRINT NAME: Julie Reynolds FIRM: NCA TIME: 1530

ADDITIONAL REMARKS:

PAGE OF

COC Rev 6, 10/94

SCOEPA00019672

NORTH CREEK ANALYTICAL

18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508 (206) 481-9200 FAX 485-2992
East 11115 Montgomery, Suite B, Spokane, WA 99206-4779 (509) 924-9200 FAX 924-9290
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202

CHAIN OF CUSTODY REPORT

CLIENT: Wacker Siltronic
ADDRESS: 7200 N.W. Front Ave
Portland, OR
PHONE: 243-2020 x-7374 FAX: 241-7599

REPORT TO: Dianne E Mullan
BILLING TO:
P.O. NUMBER: 60068
NCA QUOTE #:

PROJECT NAME: FAB-2
PROJECT NUMBER: BOX-54
SAMPLED BY: Paul Wittke, Dianne Mullan

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: 10 | 5 | 3 | 2 | 1

(Please Select One)

Fuels & Hydrocarbon Analyses: 5 | 3 | ~~2~~ | 1

** Turnaround Requests less than standard will incur Rush Charges.*

FAX RESULTS BY :

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	Benzene Screen	TPH-D	COMMENTS & PRESERVATIVES USED	NCA SAMPLE NUMBER
1. 95-598	9.7.95/1000	S	1	X	X	held on ice	
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							

RELINQUISHED BY: Dianne E Mullan	DATE: 9-7-95	RECEIVED BY: Bill Fabry	DATE: 9/7/95
PRINT NAME: Dianne Mullan FIRM: Wacker Siltronic	TIME: 1030	PRINT NAME: FIRM: NCA	TIME: 1030
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
PRINT NAME: FIRM:	TIME:	PRINT NAME: FIRM:	TIME:

ADDITIONAL REMARKS:

PAGE OF

COC Rev 6, 10/94

SCOEPA00019673

NORTH CREEK ANALYTICAL

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East 11115 Montgomery, Suite B, Spokane, WA 99206-4779 (509) 924-9200 FAX 924-9290
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202

CHAIN OF CUSTODY REPORT

Work Order #:

CLIENT: Wacker Siltronic

ADDRESS: 7200 N.W. Front Ave
Portland, OR

PHONE: 243-2020 X-7274 FAX: 417-4117

PROJECT NAME: Soil

PROJECT NUMBER: Box 55-60

SAMPLED BY: Dianne Mullan,

REPORT TO: Dianne Mullan

ATTENTION:

BILLING TO:

P.O. NUMBER: 51085

NCA QUOTE #:

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: 10 | 5 | 3 | ~~2~~ | 1

Fuels & Hydrocarbon Analyses: 5 | 3 | 2 | 1

OTHER Specify:

** Turnaround Requests less than standard may incur Rush Charges.*

NCA SAMPLE NUMBER (Box)	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE / TIME	Analysis Request: TCLP - Metals RCRA - 8	MATRIX (W, S, O)	# OF CONTAINERS	COMMENTS & PRESERVATIVES USED
55	1. 96-589	6-24-96 / 1410	X	S	1	
56-a	2. 96-590	6-24-96 / 1415	X	S	1	
56-b	3. 96-591	6-24-96 / 1420	X	S	1	
56-c	4. 96-592	6-24-96 / 1425	X	S	1	
57-	5. 96-593	6-24-96 / 1430	X	S	1	
58	6. 96-594	6-24-96 / 1435	X	S	1	
59	7. 96-595	6-24-96 / 1440	X	S	1	
60	8. 96-596	6-24-96 / 1445	X	S	1	
	9.					
	10.					

RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
PRINT NAME: FIRM:	TIME:	PRINT NAME: FIRM:	TIME:
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
PRINT NAME: FIRM:	TIME:	PRINT NAME: FIRM:	TIME:

ADDITIONAL REMARKS:

PAGE OF

COC Rev 7, 8/95

SCOEPA00019674

NORTH CREEK ANALYTICAL

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East 11115 Montgomery, Suite B, Spokane, WA 99206-4779 (509) 924-9200 FAX 924-9290
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202

CHAIN OF CUSTODY REPORT

Work Order #:

CLIENT: Wacker Siltronic

ADDRESS: 7200 N.W. Front Ave
Portland, OR

PHONE: 243-2020 X. 7274 FAX: 417-4117

PROJECT NAME: Soil

PROJECT NUMBER: Box 55-60

SAMPLED BY: Dianne Mullan

REPORT TO: Dianne Mullan

ATTENTION:

BILLING TO:

P.O. NUMBER: 51085

NCA QUOTE #:

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: 10 | 5 | 3 | ~~2~~ | 1

Fuels & Hydrocarbon Analyses: 5 | 3 | 2 | 1

OTHER Specify:

** Turnaround Requests less than standard may incur Rush Charges.*

NCA SAMPLE NUMBER	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE / TIME	Analysis Request: TCLP-Metals RCRA-8	MATRIX (W, S, O)	# OF CONTAINERS	COMMENTS & PRESERVATIVES USED
	1. 96-589	6-24-96/1410	X	S	1	
	2. 96-590	6-24-96/1415	X	S	1	
	3. 96-591	6-24-96/1420	X	S	1	
	4. 96-592	6-24-96/1425	X	S	1	
	5. 96-593	6-24-96/1430	X	S	1	
	6. 96-594	6-24-96/1435	X	S	1	
	7. 96-595	6-24-96/1440	X	S	1	
	8. 96-596	6-24-96/1445	X	S	1	
	9.					
	10.					

RELINQUISHED BY: Dianne Mullan	DATE: 6-24-96	RECEIVED BY: Bob Fabs	DATE: 6/24/96
PRINT NAME: Dianne Mullan FIRM: Wacker Siltronic	TIME: 1538	PRINT NAME: FIRM: NCA	TIME: 1615
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
PRINT NAME: FIRM:	TIME:	PRINT NAME: FIRM:	TIME:

ADDITIONAL REMARKS:

PAGE OF

COC Rev 7, 8/95

SCOEPA00019675

Box 55

LOG SHEET

SAMPLES SENT TO OUTSIDE LABORATORY

1. Facilities Operations # (Year - #): 96-581

2. Date/Time of Sample: 4.22.96 / 1600

3. Name of Sampler: Gary Kent, Dianne Mullan

4. Sample Description: Footing for ramp at N.W. corner of Waste Treatment Plant - Soil

5. Sent To: X North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

___ Wacker's Analytical Laboratory

___ Columbia Analytical Services, Incorporated
1152 3rd Avenue
Longview, Washington 98632
(206) 577-7222

___ _____

_____

_____

6. Analyses Required: TCLP - 8240, 8081, 8150, 8151, TPH-G
TPH-D, 418.1 mod., pH 9040, Flashpoint 1010

7. Chain of Custody Submitted; (Yes) No

8. Purchase Order Number: 51085

9. Cost (or estimate): _____

10. Results Received On: _____

11. Additional Notes; _____

_____

_____

TJR 15 Nov 91
TJR 1 Jul 94 Revised

LOG SHEET

SAMPLES SENT TO OUTSIDE LABORATORY

1. Facilities Operations # (Year - #): 96-582

2. Date/Time of Sample: 4.22.96 / 1605

3. Name of Sampler: Dianne Mullen, Gary Kent

4. Sample Description: 55a - pge hole

5. Sent To: X North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

___ Wacker's Analytical Laboratory

___ Columbia Analytical Services, Incorporated
1152 3rd Avenue
Longview, Washington 98632
(206) 577-7222

___

6. Analyses Required: TCLP- 8081, 8240, 8150, 8151, TPH-G
TPH-D, 418.1 mod, pH-9040, Flash point 1010

7. Chain of Custody Submitted; (Yes) No

8. Purchase Order Number: ~~510~~ 51085

9. Cost (or estimate): _____

10. Results Received On: _____

11. Additional Notes; box 55a

TJR 15 Nov 91
TJR 1 Jul 94 Revised

LOG SHEET

SAMPLES SENT TO OUTSIDE LABORATORY

1. Facilities Operations # (Year - #): 96-583

2. Date/Time of Sample: 4.22.96 / 1610

3. Name of Sampler: Dianne Mullan, Gary Kent

4. Sample Description: Box 56 b (footing)

5. Sent To: X North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

___ Wacker's Analytical Laboratory

___ Columbia Analytical Services, Incorporated
1152 3rd Avenue
Longview, Washington 98632
(206) 577-7222

___ _____

6. Analyses Required: TCLP-8081, 8240, 8150, 8151, TPH-G, TPH-D
418.1 mod., pH 9040, Flash point 1010

7. Chain of Custody Submitted; (Yes) No

8. Purchase Order Number: 51085

9. Cost (or estimate): _____

10. Results Received On: _____

11. Additional Notes; _____

TJR 15 Nov 91
TJR 1 Jul 94 Revised

LOG SHEET

SAMPLES SENT TO OUTSIDE LABORATORY

1. Facilities Operations # (Year - #): 96-584

2. Date/Time of Sample: 4-22-96 / 1615

3. Name of Sampler: Dianne Mullan, Gary Kent

4. Sample Description: Box 56 c mixture

5. Sent To: X North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

___ Wacker's Analytical Laboratory

___ Columbia Analytical Services, Incorporated
1152 3rd Avenue
Longview, Washington 98632
(206) 577-7222

___ _____

6. Analyses Required: TCLP- 8081, 8240, 8150, 8151
TPH-G, TPH-D, 418.1 mod, pH 9040, Flashpoint 1010

7. Chain of Custody Submitted; Yes No

8. Purchase Order Number: 51085

9. Cost (or estimate): _____

10. Results Received On: _____

11. Additional Notes; _____

TJR 15 Nov 91
TJR 1 Jul 94 Revised

LOG SHEET

SAMPLES SENT TO OUTSIDE LABORATORY

1. Facilities Operations # (Year - #): 96-585
2. Date/Time of Sample: 4-22-96 / 1620
3. Name of Sampler: Gary Kent, Dianne Mullan
4. Sample Description: Footing for ramp at N.W. corner of Waste Treatment Plant - Soil - Box 57
5. Sent To:
   - X North Creek Analytical
     (formerly Pacific Environmental Laboratory, Inc.)
     9405 SW Nimbus Avenue
     Beaverton, Oregon 97005
     643-9200
   - ___ Wacker's Analytical Laboratory
   - ___ Columbia Analytical Services, Incorporated
     1152 3rd Avenue
     Longview, Washington 98632
     (206) 577-7222
   - ___ _____
6. Analyses Required: TCLP - 8240, 8081, 8150, 8151, TPH-G TPH-D, 418.1 mod., pH - 9040, Flash Point 1010
7. Chain of Custody Submitted; (Yes) No
8. Purchase Order Number: 51085
9. Cost (or estimate): _____
10. Results Received On: _____
11. Additional Notes; _____

TJR 15 Nov 91
TJR 1 Jul 94 Revised

LOG SHEET

SAMPLES SENT TO OUTSIDE LABORATORY

1. Facilities Operations # (Year - #): 96-586

2. Date/Time of Sample: 4.22.96 / 1625

3. Name of Sampler: Gary Kent, Dianne Mullan

4. Sample Description: Footing for ramp at N.W. corner of Waste Treatment Plant - Soil Box 58

5. Sent To: X North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

___ Wacker's Analytical Laboratory

___ Columbia Analytical Services, Incorporated
1152 3rd Avenue
Longview, Washington 98632
(206) 577-7222

___ _____

_____

_____

6. Analyses Required: TCLP- 8240, 8081, 8150, 8151, TPH-G TPH-D, 418.1 mod., pH-9040, Flash Point 1010

7. Chain of Custody Submitted; (Yes) No

8. Purchase Order Number: 51085

9. Cost (or estimate): _____

10. Results Received On: _____

11. Additional Notes; _____

_____

_____

TJR 15 Nov 91
TJR 1 Jul 94 Revised

LOG SHEET

SAMPLES SENT TO OUTSIDE LABORATORY

1. Facilities Operations # (Year - #): 96-~~586~~587

2. Date/Time of Sample: 4.22.96 / 1630

3. Name of Sampler: Gary Kent, Dianne Mullan

4. Sample Description: Footing for ramp at N.W. corner of Waste Treatment Plant - Soil - Box 59

5. Sent To: X North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

___ Wacker's Analytical Laboratory

___ Columbia Analytical Services, Incorporated
1152 3rd Avenue
Longview, Washington 98632
(206) 577-7222

___ _____

_____

_____

6. Analyses Required: TCLP- 8240, 8081, 8150, 8151, TPH-G TPH-D, 418.1 mod., pH-9040, Flash Point 1010

7. Chain of Custody Submitted; (Yes) No

8. Purchase Order Number: 51085

9. Cost (or estimate): _____

10. Results Received On: _____

11. Additional Notes; _____

_____

_____

TJR 15 Nov 91
TJR 1 Jul 94 Revised

LOG SHEET

SAMPLES SENT TO OUTSIDE LABORATORY

1. Facilities Operations # (Year - #): 96-588

2. Date/Time of Sample: 4.22.96 / 1635

3. Name of Sampler: Gary Kent, Dianne Mullan

4. Sample Description: Footing for ramp at N.W. corner of Waste Treatment Plant - Soil - Box 60

5. Sent To: X North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

___ Wacker's Analytical Laboratory

___ Columbia Analytical Services, Incorporated
1152 3rd Avenue
Longview, Washington 98632
(206) 577-7222

___ _____

_____

_____

6. Analyses Required: TCLP- 8240, 8081, 8150, 8151, TPH-G TPH-D, 418.1 mod., pH-9040, Flash Point 1010

7. Chain of Custody Submitted; (Yes) No

8. Purchase Order Number: 51085

9. Cost (or estimate): _____

10. Results Received On: _____

11. Additional Notes; _____

_____

_____

TJR 15 Nov 91
TJR 1 Jul 94 Revised

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL ■ (206) 481-9200 ■ FAX 485-2992
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

May 13, 1996

Wacker Siltronic Corporation
7200 N.W. Front
Portland, OR 97210

Attention: Dianne Mullan

RE: JOB # BOX 55-60
P.O.# 51085
PROJECT - SOIL

Enclosed are test results for your samples received in this lab on Apr. 24, 1996. For your reference, these analyses have been assigned our NCA # P604358.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

This report will be accompanied by a separate Quality Control Data Report, unless omitted by client request.

Please call if you have any questions.

Respectfully,

Joy Chang

Joy Chang
Project Manager

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL ■ (206) 481-9200 ■ FAX 485-2992
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

pH per EPA 9045
Results In standard units

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P604358
Matrix: soil
Sampled: 04/22/96
Received: 04/24/96

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
96-581	P604358-1	pH	6.6	0-14	05/02/96	05/02/96
96-582	P604358-2	pH	6.7	0-14	05/02/96	05/02/96
96-583	P604358-3	pH	6.5	0-14	05/02/96	05/02/96
96-584	P604358-4	pH	6.8	0-14	05/02/96	05/02/96
96-585	P604358-5	pH	6.5	0-14	05/02/96	05/02/96
96-586	P604358-6	pH	6.8	0-14	05/02/96	05/02/96
96-587	P604358-7	pH	6.6	0-14	05/02/96	05/02/96
96-588	P604358-8	pH	6.5	0-14	05/02/96	05/02/96

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019685

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

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SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

Flashpoint (PMCC)
Results In degrees F

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P604358
Matrix: soil
Sampled: 04/22/96
Received: 04/24/96

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
96-581	P604358-1	No flash to	150		05/01/96	05/01/96
96-582	P604358-2	No flash to	150		05/01/96	05/01/96
96-583	P604358-3	No flash to	150		05/01/96	05/01/96
96-584	P604358-4	No flash to	150		05/02/96	05/02/96
96-585	P604358-5	No flash to	150		05/02/96	05/02/96
96-586	P604358-6	No flash to	150		05/02/96	05/02/96
96-587	P604358-7	No flash to	150		05/02/96	05/02/96
96-588	P604358-8	No flash to	150		05/02/96	05/02/96

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019686

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL ■ (206) 481-9200 ■ FAX 485-2992
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

TPH-G per Oregon DEQ (C6-C10)

Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P604358
Matrix: soil
Sampled: 04/22/96
Received: 04/24/96

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
96-581	P604358-1	Gasoline/Related	30	2.0	04/29/96	04/30/96
96-582	P604358-2	Gasoline/Related	170	20	04/29/96	04/30/96
96-583 *[1]	P604358-3	Gasoline/Related	12	4.0	04/29/96	04/30/96
96-584	P604358-4	Gasoline/Related	110	8.0	04/29/96	04/30/96
96-585 *[1]	P604358-5	Gasoline/Related	13	4.0	04/29/96	04/30/96
96-586	P604358-6	Gasoline/Related	13	2.0	04/29/96	04/30/96
96-587 *[1]	P604358-7	Gasoline/Related	9.5	4.0	04/29/96	04/30/96
96-588 *[1]	P604358-8	Gasoline/Related	7.2	4.0	04/29/96	04/30/96

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019687

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL ■ (206) 481-9200 ■ FAX 485-2992
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

TPH-D per Oregon DEQ (C10-C28)

Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P604358
Matrix: soil
Sampled: 04/22/96
Received: 04/24/96

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
96-581	P604358-1	Diesel/Related	7,700	1300	04/25/96	04/26/96
96-582	P604358-2	Diesel/Related	20,000	1300	04/25/96	04/26/96
96-583	P604358-3	Diesel/Related	6,900	1300	04/25/96	04/26/96
96-584	P604358-4	Diesel/Related	9,100	500	04/25/96	04/26/96
96-585	P604358-5	Diesel/Related	2,200	1300	04/25/96	04/25/96
96-586	P604358-6	Diesel/Related	2,400	500	04/25/96	04/26/96
96-587	P604358-7	Diesel/Related	4,100	500	04/25/96	04/26/96
96-588	P604358-8	Diesel/Related	2,100	500	04/25/96	04/25/96

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019688

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL ■ (206) 481-9200 ■ FAX 485-2992
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

TPH-418.1M per Oregon DEQ

Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P604358
Matrix: soil
Sampled: 04/22/96
Received: 04/24/96

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
96-581	P604358-1	TPH	32	20	04/25/96	04/29/96
96-582	P604358-2	TPH	4,300	1000	04/25/96	04/29/96
96-583	P604358-3	TPH	850	500	04/25/96	04/29/96
96-584	P604358-4	TPH	390	20	04/25/96	04/29/96
96-585	P604358-5	TPH	400	20	04/25/96	04/29/96
96-586	P604358-6	TPH	280	20	04/25/96	04/29/96
96-587	P604358-7	TPH	320	20	04/25/96	04/29/96
96-588	P604358-8	TPH	190	20	04/25/96	04/29/96

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019689

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL ■ (206) 481-9200 ■ FAX 485-2992
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

TCLP VOC's per EPA 1311, 8240

Results In mg/L (ppm)

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P604358
Matrix: soil
Sampled: 04/22/96
Received: 04/24/96
Extracted: 04/29/96

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
96-581	P604358-1	Benzene	ND	0.0020	05/02/96	05/02/96
		Carbon Tetrachloride	ND	0.0020		
		Chlorobenzene	ND	0.0020		
		Chloroform	ND	0.0020		
		1,4-Dichlorobenzene	ND	0.0020		
		1,2-Dichloroethane	ND	0.0020		
		1,1-Dichloroethene	ND	0.0020		
		Methyl Ethyl Ketone	ND	0.025		
		Tetrachloroethene	ND	0.0020		
		Trichloroethene	ND	0.0020		
		Vinyl Chloride	ND	0.0050		
96-582	P604358-2	Benzene	0.0064	0.0020	05/02/96	05/02/96
		Carbon Tetrachloride	ND	0.0020		
		Chlorobenzene	ND	0.0020		
		Chloroform	ND	0.0020		
		1,4-Dichlorobenzene	ND	0.0020		
		1,2-Dichloroethane	ND	0.0020		
		1,1-Dichloroethene	ND	0.0020		
		Methyl Ethyl Ketone	ND	0.025		
		Tetrachloroethene	ND	0.0020		
		Trichloroethene	ND	0.0020		
		Vinyl Chloride	ND	0.0050		
96-583	P604358-3	Benzene	ND	0.0020	05/02/96	05/02/96
		Carbon Tetrachloride	ND	0.0020		
		Chlorobenzene	ND	0.0020		
		Chloroform	ND	0.0020		
		1,4-Dichlorobenzene	ND	0.0020		
		1,2-Dichloroethane	ND	0.0020		
		1,1-Dichloroethene	ND	0.0020		
		Methyl Ethyl Ketone	ND	0.025		
		Tetrachloroethene	ND	0.0020		
		Trichloroethene	ND	0.0020		
		Vinyl Chloride	ND	0.0050		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019690

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL ■ (206) 481-9200 ■ FAX 485-2992
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

TCLP VOC's per EPA 1311, 8240

Results In mg/L (ppm)

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P604358
Matrix: soil
Sampled: 04/22/96
Received: 04/24/96
Extracted: 04/30/96

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
96-584	P604358-4	Benzene	0.011	0.0020	05/02/96	05/02/96
		Carbon Tetrachloride	ND	0.0020		
		Chlorobenzene	ND	0.0020		
		Chloroform	ND	0.0020		
		1,4-Dichlorobenzene	ND	0.0020		
		1,2-Dichloroethane	ND	0.0020		
		1,1-Dichloroethene	ND	0.0020		
		Methyl Ethyl Ketone	ND	0.025		
		Tetrachloroethene	ND	0.0020		
		Trichloroethene	ND	0.0020		
		Vinyl Chloride	ND	0.0050		
96-585	P604358-5	Benzene	ND	0.0020	05/02/96	05/02/96
		Carbon Tetrachloride	ND	0.0020		
		Chlorobenzene	ND	0.0020		
		Chloroform	ND	0.0020		
		1,4-Dichlorobenzene	ND	0.0020		
		1,2-Dichloroethane	ND	0.0020		
		1,1-Dichloroethene	ND	0.0020		
		Methyl Ethyl Ketone	ND	0.025		
		Tetrachloroethene	ND	0.0020		
		Trichloroethene	ND	0.0020		
		Vinyl Chloride	ND	0.0050		
96-586	P604358-6	Benzene	ND	0.0020	05/02/96	05/02/96
		Carbon Tetrachloride	ND	0.0020		
		Chlorobenzene	ND	0.0020		
		Chloroform	ND	0.0020		
		1,4-Dichlorobenzene	ND	0.0020		
		1,2-Dichloroethane	ND	0.0020		
		1,1-Dichloroethene	ND	0.0020		
		Methyl Ethyl Ketone	ND	0.025		
		Tetrachloroethene	ND	0.0020		
		Trichloroethene	ND	0.0020		
		Vinyl Chloride	ND	0.0050		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019691

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL ■ (206) 481-9200 ■ FAX 485-2992
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

TCLP VOC's per EPA 1311, 8240

Results In mg/L (ppm)

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P604358
Matrix: soil
Sampled: 04/22/96
Received: 04/24/96
Extracted: 05/01/96

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
96-587	P604358-7	Benzene	0.0024	0.0020	05/02/96	05/02/96
		Carbon Tetrachloride	ND	0.0020		
		Chlorobenzene	ND	0.0020		
		Chloroform	ND	0.0020		
		1,4-Dichlorobenzene	ND	0.0020		
		1,2-Dichloroethane	ND	0.0020		
		1,1-Dichloroethene	ND	0.0020		
		Methyl Ethyl Ketone	ND	0.025		
		Tetrachloroethene	ND	0.0020		
		Trichloroethene	ND	0.0020		
		Vinyl Chloride	ND	0.0050		
96-588	P604358-8	Benzene	ND	0.0020	05/02/96	05/02/96
		Carbon Tetrachloride	ND	0.0020		
		Chlorobenzene	ND	0.0020		
		Chloroform	ND	0.0020		
		1,4-Dichlorobenzene	ND	0.0020		
		1,2-Dichloroethane	ND	0.0020		
		1,1-Dichloroethene	ND	0.0020		
		Methyl Ethyl Ketone	ND	0.025		
		Tetrachloroethene	ND	0.0020		
		Trichloroethene	ND	0.0020		
		Vinyl Chloride	ND	0.0050		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019692

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL ■ (206) 481-9200 ■ FAX 485-2992
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

TCLP Pesticides per EPA 1311, 8080

Results In mg/L (ppm)

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P604358
Matrix: soil
Sampled: 04/22/96
Received: 04/24/96
Extracted: 04/25/96

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
96-581	P604358-1	Chlordane	ND	0.020	05/02/96	05/03/96
		Endrin	ND	0.00040		
		Heptachlor	ND	0.00040		
		Heptachlor Epoxide	ND	0.00040		
		Lindane	ND	0.00040		
		Methoxychlor	ND	0.00040		
		Toxaphene	ND	0.020		
96-582	P604358-2	Chlordane	ND	0.020	05/02/96	05/03/96
		Endrin	ND	0.00040		
		Heptachlor	ND	0.00040		
		Heptachlor Epoxide	ND	0.00040		
		Lindane	ND	0.00040		
		Methoxychlor	ND	0.00040		
		Toxaphene	ND	0.020		
96-583	P604358-3	Chlordane	ND	0.020	05/02/96	05/03/96
		Endrin	ND	0.00040		
		Heptachlor	ND	0.00040		
		Heptachlor Epoxide	ND	0.00040		
		Lindane	ND	0.00040		
		Methoxychlor	ND	0.00040		
		Toxaphene	ND	0.020		
96-584	P604358-4	Chlordane	ND	0.020	05/02/96	05/03/96
		Endrin	ND	0.00040		
		Heptachlor	ND	0.00040		
		Heptachlor Epoxide	ND	0.00040		
		Lindane	ND	0.00040		
		Methoxychlor	ND	0.00040		
		Toxaphene	ND	0.020		
96-585	P604358-5	Chlordane	ND	0.020	05/02/96	05/03/96
		Endrin	ND	0.00040		
		Heptachlor	ND	0.00040		
		Heptachlor Epoxide	ND	0.00040		
		Lindane	ND	0.00040		
		Methoxychlor	ND	0.00040		
		Toxaphene	ND	0.020		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019693

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL ■ (206) 481-9200 ■ FAX 485-2992
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

TCLP Pesticides per EPA 1311, 8080

Results In mg/L (ppm)

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P604358
Matrix: soil
Sampled: 04/22/96
Received: 04/24/96
Extracted: 04/25/96

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
96-586	P604358-6	Chlordane	ND	0.020	05/02/96	05/06/96
		Endrin	ND	0.00040		
		Heptachlor	ND	0.00040		
		Heptachlor Epoxide	ND	0.00040		
		Lindane	ND	0.00040		
		Methoxychlor	ND	0.00040		
		Toxaphene	ND	0.020		
96-587	P604358-7	Chlordane	ND	0.020	05/02/96	05/06/96
		Endrin	ND	0.00040		
		Heptachlor	ND	0.00040		
		Heptachlor Epoxide	ND	0.00040		
		Lindane	ND	0.00040		
		Methoxychlor	ND	0.00040		
		Toxaphene	ND	0.020		
96-588	P604358-8	Chlordane	ND	0.020	05/02/96	05/06/96
		Endrin	ND	0.00040		
		Heptachlor	ND	0.00040		
		Heptachlor Epoxide	ND	0.00040		
		Lindane	ND	0.00040		
		Methoxychlor	ND	0.00040		
		Toxaphene	ND	0.020		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019694

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL ■ (206) 481-9200 ■ FAX 485-2992
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

TCLP Herbicides per EPA 1311, 8150

Results In mg/L (ppm)

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P604358
Matrix: soil
Sampled: 04/22/96
Received: 04/24/96
Extracted: 04/25/96

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
96-581	P604358-1	2,4-D	ND	0.040	05/01/96	05/03/96
		2,4,5-TP (Silvex)	ND	0.020		
96-582	P604358-2	2,4-D	ND	0.040	05/01/96	05/03/96
		2,4,5-TP (Silvex)	ND	0.020		
96-583	P604358-3	2,4-D	ND	0.040	05/01/96	05/03/96
		2,4,5-TP (Silvex)	ND	0.020		
96-584	P604358-4	2,4-D	ND	0.040	05/01/96	05/03/96
		2,4,5-TP (Silvex)	ND	0.020		
96-585	P604358-5	2,4-D	ND	0.040	05/01/96	05/03/96
		2,4,5-TP (Silvex)	ND	0.020		
96-586	P604358-6	2,4-D	ND	0.040	05/01/96	05/03/96
		2,4,5-TP (Silvex)	ND	0.020		
96-587	P604358-7	2,4-D	ND	0.040	05/01/96	05/03/96
		2,4,5-TP (Silvex)	ND	0.020		
96-588	P604358-8	2,4-D	ND	0.040	05/01/96	05/03/96
		2,4,5-TP (Silvex)	ND	0.020		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019695

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL ■ (206) 481-9200 ■ FAX 485-2992
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

SURROGATE RECOVERIES (%)

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Number: P604358
Received: 04/24/1996

Sample Name	Analyte	Result	Control Limits
TPH-G per Oregon DEQ (C6-C10)			
96-581	4-Bromofluorobenzene	103	63-126
	Trifluorotoluene	82	50-150
96-582	4-Bromofluorobenzene	80	63-126
	Trifluorotoluene	56	50-150
96-583	4-Bromofluorobenzene	102	63-126
	Trifluorotoluene	74	50-150
96-584	4-Bromofluorobenzene	80	63-126
	Trifluorotoluene	62	50-150
96-585	4-Bromofluorobenzene	101	63-126
	Trifluorotoluene	81	50-150
96-586	4-Bromofluorobenzene	87	63-126
	Trifluorotoluene	85	50-150
96-587	4-Bromofluorobenzene	94	63-126
	Trifluorotoluene	78	50-150
96-588	4-Bromofluorobenzene	80	63-126
	Trifluorotoluene	59	50-150

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019696

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL ■ (206) 481-9200 ■ FAX 485-2992
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

SURROGATE RECOVERIES (%)

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Number: P604358
Received: 04/24/1996

Sample Name	Analyte	Result	Control Limits
TPH-D per Oregon DEQ (C10-C28)			
96-581	1-Chlorooctadecane	-- *2	50-150
96-582	1-Chlorooctadecane	-- *2	50-150
96-583	1-Chlorooctadecane	-- *2	50-150
96-584	1-Chlorooctadecane	-- *2	50-150
96-585	1-Chlorooctadecane	-- *3	50-150
96-586	1-Chlorooctadecane	-- *3	50-150
96-587	1-Chlorooctadecane	-- *3	50-150
96-588	1-Chlorooctadecane	-- *3	50-150

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019697

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL ■ (206) 481-9200 ■ FAX 485-2992
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

SURROGATE RECOVERIES (%)

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Number: P604358
Received: 04/24/1996

Sample Name	Analyte	Result	Control Limits
TCLP VOC's per EPA 1311, 8240			
96-581	4-Bromofluorobenzene	102	74-121
	Dibromofluoromethane	101	80-120
	Toluene-d8	101	81-117
96-582	4-Bromofluorobenzene	105	74-121
	Dibromofluoromethane	100	80-120
	Toluene-d8	101	81-117
96-583	4-Bromofluorobenzene	104	74-121
	Dibromofluoromethane	100	80-120
	Toluene-d8	102	81-117
96-584	4-Bromofluorobenzene	104	74-121
	Dibromofluoromethane	101	80-120
	Toluene-d8	101	81-117
96-585	4-Bromofluorobenzene	103	74-121
	Dibromofluoromethane	101	80-120
	Toluene-d8	102	81-117
96-586	4-Bromofluorobenzene	103	74-121
	Dibromofluoromethane	105	80-120
	Toluene-d8	101	81-117
96-587	4-Bromofluorobenzene	106	74-121
	Dibromofluoromethane	104	80-120
	Toluene-d8	101	81-117
96-588	4-Bromofluorobenzene	104	74-121
	Dibromofluoromethane	103	80-120
	Toluene-d8	102	81-117

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019698

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL ■ (206) 481-9200 ■ FAX 485-2992
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

SURROGATE RECOVERIES (%)

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Number: P604358
Received: 04/24/1996

Sample Name	Analyte	Result	Control Limits
TCLP Pesticides per EPA 1311, 8080			
96-581	Decachlorobiphenyl	69	65-130
	2,4,5,6-Tetrachloro-m-xylene	76	65-130
96-582	Decachlorobiphenyl	93	65-130
	2,4,5,6-Tetrachloro-m-xylene	78	65-130
96-583	Decachlorobiphenyl	80	65-130
	2,4,5,6-Tetrachloro-m-xylene	73	65-130
96-584	Decachlorobiphenyl	107	65-130
	2,4,5,6-Tetrachloro-m-xylene	75	65-130
96-585	Decachlorobiphenyl	89	65-130
	2,4,5,6-Tetrachloro-m-xylene	85	65-130
96-586	Decachlorobiphenyl	80	65-130
	2,4,5,6-Tetrachloro-m-xylene	85	65-130
96-587	Decachlorobiphenyl	89	65-130
	2,4,5,6-Tetrachloro-m-xylene	83	65-130
96-588	Decachlorobiphenyl	99	65-130
	2,4,5,6-Tetrachloro-m-xylene	83	65-130

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019699

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL ■ (206) 481-9200 ■ FAX 485-2992
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

SURROGATE RECOVERIES (%)

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Number: P604358
Received: 04/24/1996

Sample Name	Analyte	Result	Control Limits
TCLP Herbicides per EPA 1311, 8150			
96-581	2,4-Dichlorophenyl acetic acid	114	35-143
96-582	2,4-Dichlorophenyl acetic acid	106	35-143
96-583	2,4-Dichlorophenyl acetic acid	111	35-143
96-584	2,4-Dichlorophenyl acetic acid	118	35-143
96-585	2,4-Dichlorophenyl acetic acid	98	35-143
96-586	2,4-Dichlorophenyl acetic acid	106	35-143
96-587	2,4-Dichlorophenyl acetic acid	110	35-143
96-588	2,4-Dichlorophenyl acetic acid	98	35-143

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019700

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL ■ (206) 481-9200 ■ FAX 485-2992
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

COMMENTS

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Number: P604358
Received: 04/24/1996

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1. Reporting limit is raised due to high hydrocarbon concentration.

2. Unable to calculate surrogate recovery due to high analyte concentration.

3. Unable to calculate surrogate recovery due to matrix interference.

SCOEPA00019701

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL ■ (206) 481-9200 ■ FAX 485-2992
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

May 13, 1996

Wacker Siltronic Corporation
7200 N.W. Front
Portland, OR 97210

Attention: Dianne Mullan

Re: Quality Control Data
JOB # BOX 55-60
P.O.# 51085
PROJECT - SOIL

NCA project number P604358.

Note: Surrogate Recoveries are included in the final report.

QUALITY CONTROL DEFINITIONS

METHOD BLANK RESULTS

The method blank is an analyte-free matrix which is carried through the same analytical process as the samples. It is used to document contamination that may result from the analytical process.

SURROGATE STANDARD

A surrogate standard (i.e., a chemical compound not expected to occur in an environmental sample) is added to each sample, blank, and matrix spike sample just prior to extraction or processing. The recovery of the surrogate standard is used to monitor for unusual matrix effects, gross sample processing errors, etc. Surrogate recovery is evaluated for acceptance by determining whether the measured concentration falls within accepted limits.

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

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Accuracy is measured by percent recovery as in:

$$\% \text{ Recovery} = \frac{\text{(Measured Concentration)}}{\text{(Actual Concentration)}} \times 100$$

Precision is measured using duplicate tests by relative percent difference.

$$\text{RPD} = \frac{\text{(Result of Test 1 - Result of Test 2)}}{\text{(Result of Test 1 + Result of Test 2)/2}} \times 100$$

If you should have any questions concerning this report, please contact me.

Sincerely,

Joy Chang
Project Manager

SCOEPA00019703

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL ■ (206) 481-9200 ■ FAX 485-2992
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

BATCH QUALITY CONTROL RESULTS
pH per EPA 9045

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P604358
Received: 04/24/96

DUPLICATE
Batch # JK96012a
Results In standard units

Compound	Sample Result	Dup Result
pH	6.54	6.63

SCOEPA00019704

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL ■ (206) 481-9200 ■ FAX 485-2992
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

BATCH QUALITY CONTROL RESULTS
Flashpoint (PMCC)

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P604358
Received: 04/24/96

DUPLICATE
Batch # FF96006a
Results In Degrees F

Compound	Sample Result	Dup Result
No Flash to:	150	150

DUPLICATE
Batch # FF96007a
Results In Degrees F

Compound	Sample Result	Dup Result
No Flash to:	150	150

SCOEPA00019705

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL ■ (206) 481-9200 ■ FAX 485-2992
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

BATCH QUALITY CONTROL RESULTS
TPH-G per Oregon DEQ (C6-C10)

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P604358
Received: 04/24/96

METHOD BLANK
Batch # BT96019a
Results In mg/kg (ppm)

Compound	Result	MRL
Gasoline/Related	ND	2.0
Date Prepared	04/29/96	
Date Analyzed	05/01/96	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	108	63-126
Trifluorotoluene	105	50-150

DUPLICATE
Batch # BT96019a
Results In mg/kg (ppm)

Duplicate ID P604358-1

Compound	Sample Conc	Dup Conc	RPD	QC Limit RPD
Gasoline (z)	30	9.1	107	50

(z) Sample appears to be non-homogeneous.

SCOEPA00019706

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL ■ (206) 481-9200 ■ FAX 485-2992
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

BATCH QUALITY CONTROL RESULTS
TPH-G per Oregon DEQ (C6-C10)

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P604358
Received: 04/24/96

DUPLICATE
Batch # BT96019y
Results In mg/kg (ppm)

Duplicate ID P604358-7

Compound	Sample Conc	Dup Conc	RPD	QC Limit RPD
Gasoline	9.5	10	5.1	50

LABORATORY CONTROL SAMPLE
Batch # BT96019a
Results In mg/kg (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Gasoline	31	32	103	50-150

SCOEPA00019707

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL ■ (206) 481-9200 ■ FAX 485-2992
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

BATCH QUALITY CONTROL RESULTS
TPH-D per Oregon DEQ (C10-C28)

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P604358
Received: 04/24/96

METHOD BLANK
Batch # FC96008b
Results In mg/kg (ppm)

Compound	Result	MRL
Diesel/Related	ND	25
Date Prepared	04/25/96	
Date Analyzed	04/25/96	

Surrogate Recovery (%)	Result	Control Limit
1-Chlorooctadecane	125	50-150

DUPLICATE
Batch # FC96008b
Results In mg/kg (ppm)

Duplicate ID P604358-3

Compound	Sample Conc	Dup Conc	RPD	QC Limit RPD
Diesel/related (z)	6,900	3,600	63	50

(z) Sample appears to be non-homogeneous.

SCOEPA00019708

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL ■ (206) 481-9200 ■ FAX 485-2992
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

BATCH QUALITY CONTROL RESULTS
TPH-D per Oregon DEQ (C10-C28)

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P604358
Received: 04/24/96

LABORATORY CONTROL SAMPLE
Batch # FC96008a
Results In mg/kg (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Diesel/related	125	108	86	50-150

SCOEPA00019709

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL ■ (206) 481-9200 ■ FAX 485-2992
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PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

BATCH QUALITY CONTROL RESULTS
TPH-418.1M per Oregon DEQ

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P604358
Received: 04/24/96

METHOD BLANK
Batch # FB96018a
Results In mg/kg (ppm)

Compound	Result	MRL
TPH	ND	20
Date Prepared	04/25/96	
Date Analyzed	04/25/96	

DUPLICATE
Batch # FB96018a **Duplicate ID P604369-2**
Results In mg/kg (ppm)

Compound	Sample Conc	Dup Conc	RPD	QC Limit RPD
TPH	717	660	8.3	50

DUPLICATE
Batch # FB96018y **Duplicate ID P604358-1**
Results In mg/kg (ppm)

Compound	Sample Conc	Dup Conc	RPD	QC Limit RPD
TPH (ap)	32	46.2	--	50

(ap) RPD is not reported for sample concentrations less than 5 times the MRL.

SCOEPA00019710

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

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PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

BATCH QUALITY CONTROL RESULTS
TPH-418.1M per Oregon DEQ

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P604358
Received: 04/24/96

LABORATORY CONTROL SAMPLE
Batch # FB96018a
Results In mg/kg (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
TPH	125	110	88	30-134

SCOEPA00019711

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

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PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 1311, 8240

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P604358
Received: 04/24/96

METHOD BLANK
Batch # VZ96004c
Results In mg/L (ppm)

Compound	Result	MRL
Benzene	ND	0.0020
Carbon Tetrachloride	ND	0.0020
Chlorobenzene	ND	0.0020
Chloroform	ND	0.0020
1,4-Dichlorobenzene	ND	0.0020
1,2-Dichloroethane	ND	0.0020
1,1-Dichloroethene	ND	0.0020
Methyl Ethyl Ketone	ND	0.025
Tetrachloroethene	ND	0.0020
Trichloroethene	ND	0.0020
Vinyl Chloride	ND	0.0050
Date Extracted	04/29/96	
Date Prepared	05/02/96	
Date Analyzed	05/02/96	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	102	74-121
Dibromofluoromethane	111	80-120
Toluene-d8	101	81-117

SCOEPA00019712

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

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SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 1311, 8240

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P604358
Received: 04/24/96

METHOD BLANK
Batch # VZ96004d
Results In mg/L (ppm)

Compound	Result	MRL
Benzene	ND	0.0020
Carbon Tetrachloride	ND	0.0020
Chlorobenzene	ND	0.0020
Chloroform	ND	0.0020
1,4-Dichlorobenzene	ND	0.0020
1,2-Dichloroethane	ND	0.0020
1,1-Dichloroethene	ND	0.0020
Methyl Ethyl Ketone	ND	0.025
Tetrachloroethene	ND	0.0020
Trichloroethene	ND	0.0020
Vinyl Chloride	ND	0.0050
Date Extracted	04/30/96	
Date Prepared	05/02/96	
Date Analyzed	05/02/96	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	104	74-121
Dibromofluoromethane	107	80-120
Toluene-d8	101	81-117

SCOEPA00019713

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL ■ (206) 481-9200 ■ FAX 485-2992
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 1311, 8240

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P604358
Received: 04/24/96

METHOD BLANK
Batch # VZ96004e
Results In mg/L (ppm)

Compound	Result	MRL
Benzene	ND	0.0020
Carbon Tetrachloride	ND	0.0020
Chlorobenzene	ND	0.0020
Chloroform	ND	0.0020
1,4-Dichlorobenzene	ND	0.0020
1,2-Dichloroethane	ND	0.0020
1,1-Dichloroethene	ND	0.0020
Methyl Ethyl Ketone	ND	0.025
Tetrachloroethene	ND	0.0020
Trichloroethene	ND	0.0020
Vinyl Chloride	ND	0.0050
Date Extracted	05/01/96	
Date Prepared	05/02/96	
Date Analyzed	05/02/96	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	104	74-121
Dibromofluoromethane	103	80-120
Toluene-d8	102	81-117

SCOEPA00019714

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

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SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 1311, 8240

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P604358
Received: 04/24/96

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # VZ96004a **Spike ID P604155-3**
Results In mg/L (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS %Rec
Benzene	0.020	ND	0.0218	109
Carbon Tetrachloride	0.020	ND	0.0191	96
Chlorobenzene	0.020	ND	0.0202	101
Chloroform	0.020	ND	0.0201	101
1,4-Dichlorobenzene	0.020	ND	0.0191	96
1,2-Dichloroethane	0.020	ND	0.0175	88
1,1-Dichloroethene	0.020	ND	0.0204	102
Methyl Ethyl Ketone	0.040	0.0676	0.104	91
Tetrachloroethene	0.020	ND	0.0182	91
Trichloroethene	0.020	ND	0.0198	99
Vinyl Chloride	0.020	ND	0.0266	133

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
Benzene	0.020	0.0217	109	0	21	66-142
Carbon Tetrachloride	0.020	0.0187	94	2.1	40	50-150
Chlorobenzene	0.020	0.0199	100	1.0	21	60-133
Chloroform	0.020	0.0204	102	0.99	40	50-150
1,4-Dichlorobenzene	0.020	0.0188	94	2.1	40	50-150
1,2-Dichloroethane	0.020	0.0181	91	3.4	40	50-150
1,1-Dichloroethene	0.020	0.0198	99	3.0	22	59-172
Methyl Ethyl Ketone	0.040	0.108	101	11	50	40-180
Tetrachloroethene	0.020	0.0178	89	2.2	50	50-150
Trichloroethene	0.020	0.0194	97	2.0	24	62-137
Vinyl Chloride	0.020	0.0261	131	1.5	50	40-180

SCOEPA00019715

NORTH CREEK ANALYTICAL
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PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 1311, 8240

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P604358
Received: 04/24/96

LABORATORY CONTROL SAMPLE
Batch # VZ96004c
Results In mg/L (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Benzene	0.020	0.0243	122	66-142
Carbon Tetrachloride	0.020	0.0200	100	50-150
Chlorobenzene	0.020	0.0208	104	60-133
Chloroform	0.020	0.0234	117	50-150
1,4-Dichlorobenzene	0.020	0.0207	104	50-150
1,2-Dichloroethane	0.020	0.0211	106	50-150
1,1-Dichloroethene	0.020	0.0202	101	59-172
Methyl Ethyl Ketone	0.040	0.0626	157	40-180
Tetrachloroethene	0.020	0.0175	88	50-150
Trichloroethene	0.020	0.0194	97	62-137
Vinyl Chloride	0.020	0.0239	120	40-180

LABORATORY CONTROL SAMPLE
Batch # VZ96004d
Results In mg/L (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Benzene	0.020	0.0243	122	66-142
Carbon Tetrachloride	0.020	0.0200	100	50-150
Chlorobenzene	0.020	0.0208	104	60-133
Chloroform	0.020	0.0234	117	50-150
1,4-Dichlorobenzene	0.020	0.0207	104	50-150
1,2-Dichloroethane	0.020	0.0211	106	50-150
1,1-Dichloroethene	0.020	0.0202	101	59-172
Methyl Ethyl Ketone	0.040	0.0626	157	40-180
Tetrachloroethene	0.020	0.0175	88	50-150
Trichloroethene	0.020	0.0194	97	62-137
Vinyl Chloride	0.020	0.0239	120	40-180

SCOEPA00019716

NORTH CREEK ANALYTICAL
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PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 1311, 8240

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P604358
Received: 04/24/96

LABORATORY CONTROL SAMPLE
Batch # VZ96004e
Results In mg/L (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Benzene	0.020	0.0243	122	66-142
Carbon Tetrachloride	0.020	0.0200	100	50-150
Chlorobenzene	0.020	0.0208	104	60-133
Chloroform	0.020	0.0234	117	50-150
1,4-Dichlorobenzene	0.020	0.0207	104	50-150
1,2-Dichloroethane	0.020	0.0211	106	50-150
1,1-Dichloroethene	0.020	0.0202	101	59-172
Methyl Ethyl Ketone	0.040	0.0626	157	40-180
Tetrachloroethene	0.020	0.0175	88	50-150
Trichloroethene	0.020	0.0194	97	62-137
Vinyl Chloride	0.020	0.0239	120	40-180

SCOEPA00019717

NORTH CREEK ANALYTICAL
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BATCH QUALITY CONTROL RESULTS
TCLP Pesticides per EPA 1311, 8080

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P604358
Received: 04/24/96

METHOD BLANK
Batch # TT96003a
Results In ug/ml (ppm)

Compound	Result	MRL
Chlordane	ND	0.020
Endrin	ND	0.00040
Heptachlor	ND	0.00040
Heptachlor Epoxide	ND	0.00040
Lindane	ND	0.00040
Methoxychlor	ND	0.00040
Toxaphene	ND	0.020
Date Extracted	04/25/96	
Date Prepared	05/02/96	
Date Analyzed	05/03/96	

Surrogate Recovery (%)	Result	Control Limit
Decachlorobiphenyl	104	65-130
2,4,5,6-Tetrachloro-m-xylene	79	65-130

MATRIX SPIKE
Batch # TT96003a
Results In ug/ml (ppm)

Spike ID P604358-1

Compound	Spike Added	Sample Conc	MS Conc	MS % Rec	QC Limit % Rec
Endrin	0.040	ND	0.0365	91	50-150
Heptachlor	0.040	ND	0.0341	85	50-150
Heptachlor Epoxide	0.040	ND	0.0349	87	50-150
Lindane	0.040	ND	0.0294	74	50-150
Methoxychlor	0.040	ND	0.0352	88	50-150

SCOEPA00019718

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

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PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

BATCH QUALITY CONTROL RESULTS
TCLP Pesticides per EPA 1311, 8080

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P604358
Received: 04/24/96

LABORATORY CONTROL SAMPLE AND LABORATORY CONTROL SAMPLE DUPLICATE
Batch # TT96003a
Results In ug/ml (ppm)

Compound	True	Found	% Rec
Endrin	0.040	0.0345	86
Heptachlor	0.040	0.0317	79
Heptachlor Epoxide	0.040	0.0331	83
Lindane	0.040	0.0276	69
Methoxychlor	0.040	0.0342	86

Compound	Dup True	Dup Found	Dup % Rec	RPD	QC Limit RPD	QC Limit % Rec
Endrin	0.040	0.0339	85	1.2	50	30-147
Heptachlor	0.040	0.0301	75	5.2	50	34-111
Heptachlor Epoxide	0.040	0.0326	82	1.2	50	50-150
Lindane	0.040	0.0264	66	4.4	50	32-127
Methoxychlor	0.040	0.0332	83	3.6	50	50-150

SCOEPA00019719

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

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PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

BATCH QUALITY CONTROL RESULTS
TCLP Herbicides per EPA 1311, 8150

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P604358
Received: 04/24/96

METHOD BLANK
Batch # HP96012a
Results In mg/L (ppm)

Compound	Result	MRL
2,4-D	ND	0.040
2,4,5-TP (Silvex)	ND	0.020
Date Extracted	04/25/96	
Date Prepared	05/01/96	
Date Analyzed	05/03/96	

Surrogate Recovery (%)	Result	Control Limit
2,4-Dichlorophenyl acetic acid	98	35-143

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # HP96012a **Spike ID P604358-2**
Results In mg/L (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS %Rec
2,4-D	0.060	ND	0.0658	110
2,4,5-TP (Silvex)	0.003	ND	0.0032	107

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
2,4-D	0.060	0.0595	99	11	50	50-150
2,4,5-TP (Silvex)	0.003	0.0028	93	14	50	50-150

SCOEPA00019720

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

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PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

BATCH QUALITY CONTROL RESULTS
TCLP Herbicides per EPA 1311, 8150

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P604358
Received: 04/24/96

LABORATORY CONTROL SAMPLE
Batch # HP96012a
Results In mg/L (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
2,4-D	0.060	0.0485	81	50-150
2,4,5-TP (Silvex)	0.0030	0.0026	87	50-150

SCOEPA00019721

NORTH CREEK ANALYTICAL

18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508 (206) 481-9200 FAX 485-2
East 11115 Montgomery, Suite B, Spokane, WA 99206-4779 (509) 924-9200 FAX 924-9290
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202

CHAIN OF CUSTODY REPORT

Work Order #: P604358 125

CLIENT: Wacker Siltronic
ADDRESS: 7200 N.W. Front Ave
Portland, OR
PHONE: 243-2020 X-7274 FAX: 241-7599

REPORT TO: Dianne Mullan
ATTENTION:
BILLING TO:
P.O. NUMBER: 51085
NCA QUOTE #:

PROJECT NAME: Soil
PROJECT NUMBER: Box 55-60
SAMPLED BY: Dianne Mullan, Gary Kent

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: 10 | 5 | 3 | 2 | 1

Fuels & Hydrocarbon Analyses: [X] 5 | 3 | 2 | 1

OTHER Specify:

** Turnaround Requests less than standard may incur Rush Charges.*

NCA SAMPLE NUMBER	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE / TIME	TCLP-8081	TCLP-8240	TCLP-8150 *	TCLP-8151 *	TPH-G	TPH-D	418.1 mod.	PH-9040	Flashpoint 1010	MATRIX (W, S, O)	# OF CONTAINERS	COMMENTS & PRESERVATIVES USED
	1. 96-581	4.22.96-1600	X	X	X	X	X	X	X	X	X	S	1	4° cool
	2. 96-582	1605	X	X	X	X	X	X	X	X	X	S	1	
	3. 96-583	1610	X	X	X	X	X	X	X	X	X	S	1	
	4. 96-584	1615	X	X	X	X	X	X	X	X	X	S	1	
	5. 96-585	1620	X	X	X	X	X	X	X	X	X	S	1	
	6. 96-586	1625	X	X	X	X	X	X	X	X	X	S	1	
	7. 96-587	1630	X	X	X	X	X	X	X	X	X	S	1	
	8. 96-588	1635	X	X	X	X	X	X	X	X	X	S	1	
	9.													
	10.													

RELINQUISHED BY: Paul Conroy	DATE: 4-24-96	RECEIVED BY: Sara McClurg	DATE: 4-24-96
PRINT NAME: PAUL CONROY FIRM: WACKER	TIME: 10:40 A.M.	PRINT NAME: Sara McClurg FIRM: NCA	TIME: 1040
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
PRINT NAME: FIRM:	TIME:	PRINT NAME: FIRM:	TIME:

ADDITIONAL REMARKS: * Same analysis.

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SCOEPA00019722

NORTH CREEK ANALYTICAL

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9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202

CHAIN OF CUSTODY REPORT

Work Order #: P604358

CLIENT: Wacker Siltronic
ADDRESS: 7200 N.W. Front Ave
Portland, OR
PHONE: 243-2020 X 7274 FAX: 241-7599

REPORT TO: Dianne Mullan
ATTENTION:
BILLING TO:
P.O. NUMBER: 51085
NCA QUOTE #:

PROJECT NAME: Soil
PROJECT NUMBER: Box 55-60
SAMPLED BY: Dianne Mullan, Gary Kent

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: 10 | 5 | 3 | 2 | 1

Fuels & Hydrocarbon Analyses: [X] 5 | 3 | 2 | 1

OTHER Specify:

* *Turnaround Requests less than standard may incur Rush Charges.*

Analysis Request:

NCA SAMPLE NUMBER		CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE / TIME	TCLP-8081	TCLP-8240	TCLP-8150	TCLP-8151	TPH-G	TPH-D	418.1 mod.	pH-9040	Flashpoint 1010	MATRIX (W, S, O)	# OF CONTAINERS	COMMENTS & PRESERVATIVES USED
Box-55	1.	96-581	4.22.96-1600	X	X	X	X	X	X	X	X	X	S	1	4° cool
56a- PGE Hole	2.	96-582	1605	X	X	X	X	X	X	X	X	X	S	1	
56-B- footing	3.	96-583	1610	X	X	X	X	X	X	X	X	X	S	1	
56-C Composite mixture	4.	96-584	1615	X	X	X	X	X	X	X	X	X	S	1	
Box-57	5.	96-585	1620	X	X	X	X	X	X	X	X	X	S	1	
Box-58	6.	96-586	1625	X	X	X	X	X	X	X	X	X	S	1	
Box-59	7.	96-587	1630	X	X	X	X	X	X	X	X	X	S	1	
Box-60	8.	96-588	1635	X	X	X	X	X	X	X	X	X	S	1	
	9.														
	10.														

RELINQUISHED BY: Paul Conroy DATE: 4-24-96
PRINT NAME: PAUL CONROY FIRM: WACKER TIME: 10:40 A.M.
RECEIVED BY: Sara McClung DATE: 4-24-96
PRINT NAME: Sara McClung FIRM: NCA TIME: 1040

RELINQUISHED BY: DATE:
PRINT NAME: FIRM: TIME:
RECEIVED BY: DATE:
PRINT NAME: FIRM: TIME:

ADDITIONAL REMARKS:

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SCOEPA00019723

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

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PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

June 27, 1996

Wacker Siltronic Corporation
7200 N.W. Front
Portland, OR 97210

Attention: Dianne Mullan

RE: JOB # BOX 55-60
P.O.# 51085
PROJECT - SOIL

Enclosed are test results for your samples received in this lab on Jun. 24, 1996. For your reference, these analyses have been assigned our NCA # P606346.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

This report will be accompanied by a separate Quality Control Data Report, unless omitted by client request.

Please call if you have any questions.

Respectfully,

Joy Chang

Joy Chang
Project Manager

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL ■ (206) 481-9200 ■ FAX 485-2992
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PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

TCLP per EPA 1311, 6010, 7470

Results In mg/L (ppm)

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P606346
Matrix: soil
Sampled: 06/24/96
Received: 06/24/96

Client ID	Lab ID	Analyte	Result	MRL	Date Extracted	Date Prepared	Date Analyzed
96-589	P606346-1	Arsenic	ND	0.50	06/25/96	06/26/96	06/26/96
		Barium	1.0	0.50			
		Cadmium	0.012	0.010			
		Chromium	ND	0.020			
		Lead	ND	0.20			
		Mercury	ND	0.00020			
		Selenium	ND	0.25			
		Silver	ND	0.010			
96-590	P606346-2	Arsenic	ND	0.50	06/25/96	06/26/96	06/26/96
		Barium	ND	0.50			
		Cadmium	0.056	0.010			
		Chromium	ND	0.020			
		Lead	ND	0.20			
		Mercury	ND	0.00020			
		Selenium	ND	0.25			
		Silver	ND	0.010			
96-591	P606346-3	Arsenic	ND	0.50	06/25/96	06/26/96	06/26/96
		Barium	ND	0.50			
		Cadmium	0.019	0.010			
		Chromium	ND	0.020			
		Lead	ND	0.20			
		Mercury	ND	0.00020			
		Selenium	ND	0.25			
		Silver	ND	0.010			
96-592	P606346-4	Arsenic	ND	0.50	06/25/96	06/26/96	06/26/96
		Barium	0.52	0.50			
		Cadmium	0.019	0.010			
		Chromium	ND	0.020			
		Lead	ND	0.20			
		Mercury	ND	0.00020			
		Selenium	ND	0.25			
		Silver	ND	0.010			

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019725

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL ■ (206) 481-9200 ■ FAX 485-2992
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

TCLP per EPA 1311, 6010, 7470

Results In mg/L (ppm)

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P606346
Matrix: soil
Sampled: 06/24/96
Received: 06/24/96

Client ID	Lab ID	Analyte	Result	MRL	Date Extracted	Date Prepared	Date Analyzed
96-593	P606346-5	Arsenic	ND	0.50	06/25/96	06/26/96	06/26/96
		Barium	0.87	0.50			
		Cadmium	0.010	0.010			
		Chromium	ND	0.020			
		Lead	ND	0.20			
		Mercury	ND	0.00020			
		Selenium	ND	0.25			
		Silver	ND	0.010			
96-594	P606346-6	Arsenic	ND	0.50	06/25/96	06/26/96	06/26/96
		Barium	0.75	0.50			
		Cadmium	0.010	0.010			
		Chromium	ND	0.020			
		Lead	ND	0.20			
		Mercury	ND	0.00020			
		Selenium	ND	0.25			
		Silver	ND	0.010			
96-595	P606346-7	Arsenic	ND	0.50	06/25/96	06/26/96	06/26/96
		Barium	0.98	0.50			
		Cadmium	ND	0.010			
		Chromium	ND	0.020			
		Lead	ND	0.20			
		Mercury	ND	0.00020			
		Selenium	ND	0.25			
		Silver	ND	0.010			
96-596	P606346-8	Arsenic	ND	0.50	06/25/96	06/26/96	06/26/96
		Barium	0.82	0.50			
		Cadmium	ND	0.010			
		Chromium	ND	0.020			
		Lead	ND	0.20			
		Mercury	ND	0.00020			
		Selenium	ND	0.25			
		Silver	ND	0.010			

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00019726

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL ■ (206) 481-9200 ■ FAX 485-2992
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

June 27, 1996

Wacker Siltronic Corporation
7200 N.W. Front
Portland, OR 97210

Attention: Dianne Mullan

Re: Quality Control Data
JOB # BOX 55-60
P.O.# 51085
PROJECT - SOIL

NCA project number P606346.

Note: Surrogate Recoveries are included in the final report.

QUALITY CONTROL DEFINITIONS

METHOD BLANK RESULTS

The method blank is an analyte-free matrix which is carried through the same analytical process as the samples. It is used to document contamination that may result from the analytical process.

SURROGATE STANDARD

A surrogate standard (i.e., a chemical compound not expected to occur in an environmental sample) is added to each sample, blank, and matrix spike sample just prior to extraction or processing. The recovery of the surrogate standard is used to monitor for unusual matrix effects, gross sample processing errors, etc. Surrogate recovery is evaluated for acceptance by determining whether the measured concentration falls within accepted limits.

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL ■ (206) 481-9200 ■ FAX 485-2992
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

Accuracy is measured by percent recovery as in:

$$\% \text{ Recovery} = \frac{\text{(Measured Concentration)}}{\text{(Actual Concentration)}} \times 100$$

Precision is measured using duplicate tests by relative percent difference.

$$\text{RPD} = \frac{\text{(Result of Test 1 - Result of Test 2)}}{\text{(Result of Test 1 + Result of Test 2)/2}} \times 100$$

If you should have any questions concerning this report, please contact me.

Sincerely,

Joy Chang
Project Manager

SCOEPA00019728

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL ■ (206) 481-9200 ■ FAX 485-2992
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

BATCH QUALITY CONTROL RESULTS
TCLP per EPA 1311, 6010, 7470

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P606346
Received: 06/24/96

METHOD BLANK
Batch # KR96066a
Results In mg/L (ppm)

Compound	Result	MRL
Arsenic	ND	0.50
Barium	ND	0.50
Cadmium	ND	0.010
Chromium	ND	0.020
Lead	ND	0.20
Selenium	ND	0.25
Silver	ND	0.010
Date Extracted	06/25/96	
Date Prepared	06/26/96	
Date Analyzed	06/26/96	

MATRIX SPIKE
Batch # KR96066a **Spike ID P606346-1**
Results In mg/L (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS % Rec	QC Limit % Rec
Arsenic	5.0	ND	4.80	96	50-150
Barium	10	1.05	9.53	85	50-150
Cadmium	1.0	0.012	0.969	96	50-150
Chromium	5.0	ND	4.56	91	50-150
Lead	5.0	ND	4.67	93	50-150
Selenium	1.0	ND	0.996	100	50-150
Silver	2.0	ND	1.88	94	50-150

SCOEPA00019729

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL ■ (206) 481-9200 ■ FAX 485-2992
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

BATCH QUALITY CONTROL RESULTS
TCLP per EPA 1311, 6010, 7470

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P606346
Received: 06/24/96

LABORATORY CONTROL SAMPLE
Batch # KR96066a
Results In mg/L (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Arsenic	5.0	4.68	94	95-120
Barium	10	8.52	85	78-116
Cadmium	1.0	0.972	97	84-120
Chromium	5.0	4.65	93	83-116
Lead	5.0	4.89	98	89-117
Selenium	1.0	1.06	106	87-123
Silver	2.0	1.91	96	76-112

SCOEPA00019730

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL ■ (206) 481-9200 ■ FAX 485-2992
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

BATCH QUALITY CONTROL RESULTS
TCLP per EPA 1311, 6010, 7470

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P606346
Received: 06/24/96

METHOD BLANK
Batch # ZT96090a
Results In mg/L (ppm)

Compound	Result	MRL
Mercury	ND	0.00020
Date Extracted	06/25/96	
Date Prepared	06/26/96	
Date Analyzed	06/26/96	

MATRIX SPIKE
Batch # ZT96090a **Spike ID P606346-1**
Results In mg/L (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS % Rec	QC Limit % Rec
Mercury	0.0050	ND	0.0050	100	50-150

LABORATORY CONTROL SAMPLE
Batch # ZT96090a
Results In mg/L (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Mercury	0.0050	0.0049	98	80-120

SCOEPA00019731

NORTH CREEK ANALYTICAL

18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508 (206) 481-9200 FAX 485-2992
East 11115 Montgomery, Suite B, Spokane, WA 99206-4779 (509) 924-9200 FAX 924-9290
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202

14.7

CHAIN OF CUSTODY REPORT

Work Order #: R6063346

CLIENT: Wacker Siltronic
ADDRESS: 7200 N.W. Front Ave, Portland, OR
PHONE: 243-2020 X-7274 FAX: 417-4117
PROJECT NAME: Soil
PROJECT NUMBER: Box 55-60
SAMPLED BY: Dianne Mullan

REPORT TO: Dianne Mullan
ATTENTION:
BILLING TO:
P.O. NUMBER: 51085
NCA QUOTE #:

TURNAROUND REQUEST in Business Days *
Organic & Inorganic Analyses: 10 | 5 | 3 | 2 (X) | 1
Fuels & Hydrocarbon Analyses: 5 | 3 | 2 | 1
OTHER Specify:
* Turnaround Requests less than standard may incur Rush Charges.

NCA SAMPLE NUMBER	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE / TIME	Analysis Request: TCLP-Metals RCRA-8	MATRIX (W, S, O)	# OF CONTAINERS	COMMENTS & PRESERVATIVES USED
R6063346-1	1. 96-589	6-24-96/1410	X	S	1	
2	2. 96-590	6-24-96/1415	X	S	1	
3	3. 96-591	6-24-96/1420	X	S	1	
4	4. 96-592	6-24-96/1425	X	S	1	
5	5. 96-593	6-24-96/1430	X	S	1	
6	6. 96-594	6-24-96/1435	X	S	1	
7	7. 96-595	6-24-96/1440	X	S	1	
8	8. 96-596	6-24-96/1445	X	S	1	
	9.					
	10.					

RELINQUISHED BY: Dianne Mullan	DATE: 6-24-96	RECEIVED BY: Bob Falls	DATE: 6/24/96
PRINT NAME: Dianne Mullan FIRM: Wacker Siltronic	TIME: 1538	PRINT NAME: FIRM: NCA	TIME: 1615
RELINQUISHED BY: Bob Falls	DATE:	RECEIVED BY: [signature]	DATE: 6-24-96
PRINT NAME: FIRM:	TIME:	PRINT NAME: FIRM: NCA	TIME: 1710

ADDITIONAL REMARKS:

PAGE OF

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SCOEPA00019732

LOG SHEET

SAMPLES SENT TO OUTSIDE LABORATORY

1. Facilities Operations # (Year - #): 96-597

2. Date/Time of Sample: 9-26-96 / 0830

3. Name of Sampler: Dianne Mullan, Matt Schmidling

4. Sample Description: Soil - drop box - 61 - south excavation site of WWTP

5. Sent To: X North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

___ Wacker's Analytical Laboratory

___ Columbia Analytical Services, Incorporated
1152 3rd Avenue
Longview, Washington 98632
(206) 577-7222

___ _____

_____

_____

6. Analyses Required: TCLP: 8081, 8240, 8150, metals RCRA -8, TPH-G, TPH-D, 418.1 mod, pH-9040, Flash pt. 1010

7. Chain of Custody Submitted; (Yes) No

8. Purchase Order Number: 401528

9. Cost (or estimate): _____

10. Results Received On: _____

11. Additional Notes; _____

_____

_____

TJR 15 Nov 91
TJR 1 Jul 94 Revised

LOG SHEET

SAMPLES SENT TO OUTSIDE LABORATORY

1. Facilities Operations # (Year - #): 96-598

2. Date/Time of Sample: 9-26-96 / 0830

3. Name of Sampler: Dianne Mullen, Matt Schmidling

4. Sample Description: Soil-dropbox #62 - south excavation site of WWTP.

5. Sent To: X North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

___ Wacker's Analytical Laboratory

___ Columbia Analytical Services, Incorporated
1152 3rd Avenue
Longview, Washington 98632
(206) 577-7222

___ _____

_____

_____

6. Analyses Required: TCLP: 8081, 8240, 8150, metals RCRA-8
TPH-G, TPH-D, 418.1 mod., pH-9040, flash pt. 1010

7. Chain of Custody Submitted; (Yes) No

8. Purchase Order Number: 401528

9. Cost (or estimate): _____

10. Results Received On: _____

11. Additional Notes; _____

_____

_____

TJR 15 Nov 91
TJR 1 Jul 94 Revised

18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508 (206) 481-9200 FAX 485-2992
East 11115 Montgomery, Suite B, Spokane, WA 99206-4779 (509) 924-9200 FAX 924-9290
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

CHAIN OF CUSTODY REPORT

Work Order # P009383

REPORT TO: Dianne Mullan (Wacker Siltronic)
ATTENTION:
ADDRESS: 7200 NW Front Ave
Portland, OR
PHONE: 243.2020 FAX: 417-4117
PROJECT NAME: Soil
PROJECT NUMBER: 61.64
SAMPLED BY: Dianne Mullan, Matt Schmidlin

INVOICE TO: Wacker Siltronic
ATTENTION:
ADDRESS: Same
P.O. NUMBER: 401528 NCA QUOTE #:

TURNAROUND REQUEST in Business Days *
Organic & Inorganic Analyses: 10 (Standard) | 7 | 5 | 4 | 3 | 2 | 1 | Same Day
Fuels & Hydrocarbon Analyses: X (Standard) | 3-4 | 2 | 1 | Same Day
OTHER Specify:
* Turnaround Requests less than standard may incur Rush Charges.

Analysis Request:

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	NCA SAMPLE ID (Laboratory Use Only)	TCLP-8081	TCLP-8240	TCLP-8150	TPH-G	TPH-D	418.1 mod.	pH - 9040	Flashpoint	TCLP-metals 1010 RCRA-8			MATRIX (W, S, A, O)	# OF CONTAINERS	COMMENTS
1.	96.597	9-26-96/0830		X	X	X	X	X	X	X	X	X			S	1	
2.	96.598	0830		X	X	X	X	X	X	X	X	X			S	1	
3.	96-599	0840		X	X	X	X	X	X	X	X	X			S	1	
4.	96-600	0840		X	X	X	X	X	X	X	X	X			S	1	
5.																	
6.																	
7.																	
8.																	
9.																	
10.																	

RELINQUISHED BY (Signature): Dianne E Mullan	DATE: 9.26.96	RECEIVED BY (Signature): P. Conroy	DATE: 9-26-96
PRINT NAME: Dianne Mullan FIRM: Wacker Siltronic	TIME: 1005	PRINT NAME: P. Conroy FIRM: WCKR.	TIME: 9:45
RELINQUISHED BY (Signature): Paul Conroy	DATE: 9/26/96	RECEIVED BY (Signature): K Stanley	DATE: 9.26.96
PRINT NAME: PAUL CONROY FIRM: WCKR.	TIME: 11:06	PRINT NAME: Karin Stanley FIRM: NCA	TIME: 1106

ADDITIONAL REMARKS:

PAGE OF

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SCOEPA00019735

18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508 (206) 48[illegible]0 FAX 485-2992
East 11115 Montgomery, Suite B, Spokane, WA 99206-4779 (509) 924-9200 FAX 924-9290
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

CHAIN OF CUSTODY REPORT

Work Order #

REPORT TO: Wacker Siltronic
ATTENTION: Dianne Mullan
ADDRESS: 7200 N.W. Front Ave
Portland Oregon
PHONE: 243.2020 FAX: 241.7599
PROJECT NAME: Soil
PROJECT NUMBER: Box - 61-64
SAMPLED BY: Dianne Mullan

INVOICE TO: Wacker
ATTENTION:
ADDRESS:
P.O. NUMBER: 401528 NCA QUOTE #:

TURNAROUND REQUEST in Business Days *
Organic & Inorganic Analyses: 10 (Standard) | 7 | 5 | 4 | 3 | 2 | 1 | Same Day
Fuels & Hydrocarbon Analyses: 5 (Standard) | 3 | 2 | 1 | Same Day
OTHER Specify:
* Turnaround Requests less than standard may incur Rush Charges.

Analysis Request: PCB; TCLP 8240 *

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	NCA SAMPLE ID (Laboratory Use Only)	PCB	TCLP 8240 *	MATRIX (W, S, A, O)	# OF CONTAINERS	COMMENTS
1.	96.602	11.15.96 0845		X	X	S	1	
2.	96.603	11.15.96 0850		X	X	S	1	
3.	96.604	11.15.96 0855		X	X	S	1	
4.	96.605	11.15.96 0900		X	X	S	1	
5.								
6.								
7.								
8.								
9.								
10.								

RELINQUISHED BY (Signature): Dianne Mullan	DATE: 11.15.96	RECEIVED BY (Signature): P. Conroy	DATE: 11-15-96
PRINT NAME: Dianne Mullan FIRM: Wacker Siltronic	TIME:	PRINT NAME: PAUL CONROY FIRM: WCKR.	TIME: 10:30
RELINQUISHED BY (Signature): Paul Conroy	DATE: 11-15-96	RECEIVED BY (Signature): Sara McClurg	DATE: 11-15-96
PRINT NAME: PAUL CONROY FIRM: WCKR	TIME: 11:05	PRINT NAME: Sara McClurg FIRM: NCA	TIME: 1110

ADDITIONAL REMARKS: * complete list

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SCOEPA00019736

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9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202 X

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

CHAIN OF CUSTODY REPORT

Work Order # [redacted]

REPORT TO: Wacker Siltronic
ATTENTION: Dianne Mullan
ADDRESS: 7200 NW Front
PHONE: 243-2020 FAX: 417-4117
PROJECT NAME: Soil
PROJECT NUMBER: Box - 64
SAMPLED BY: Dianne Mullan, Eric Spiering

INVOICE TO: Wacker
ATTENTION:
ADDRESS:
P.O. NUMBER: 401528 NCA QUOTE #:

TURNAROUND REQUEST in Business Days *
Organic & Inorganic Analyses: 10 (Standard) | 7 | 5 | 4 | 3 | 2 | 1 | Same Day
Fuels & Hydrocarbon Analyses: 5 (Standard) | 3-4 | X | 1 | Same Day
OTHER Specify:
* Turnaround Requests less than standard may incur Rush Charges.

Analysis Request: TCLP 8240

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	NCA SAMPLE ID (Laboratory Use Only)	TCLP 8240	MATRIX (W, S, A, O)	# OF CONTAINERS	COMMENTS
1.	96-601	10-04-96 0915		X	S	1	
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							

RELINQUISHED BY (Signature): Dianne Mullan	DATE: 11-04-96	RECEIVED BY (Signature): P. Conroy	DATE: 11-4-96
PRINT NAME: Dianne Mullan FIRM: Wacker Siltronic	TIME: 1015	PRINT NAME: PAUL CONROY FIRM: WACKR.	TIME: 11:00AM
RELINQUISHED BY (Signature): P. Conroy	DATE: 11-4-96	RECEIVED BY (Signature): Sara McClurg	DATE: 11-4-96
PRINT NAME: PAUL CONROY FIRM: WACKR.	TIME: 12:25 P.M.	PRINT NAME: Sara McClurg FIRM: NCA	TIME: 1225

ADDITIONAL REMARKS:

PAGE OF

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SCOEPA00019737

LOG SHEET

SAMPLES SENT TO OUTSIDE LABORATORY

1. Facilities Operations # (Year - #): 96-599

2. Date/Time of Sample: 9-26-96 / 0840

3. Name of Sampler: Dianne Mullan, Matt Schmidling

4. Sample Description: Soil drop box: #63 - trench east of WWTP

5. Sent To: ✓ North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

___ Wacker's Analytical Laboratory

___ Columbia Analytical Services, Incorporated
1152 3rd Avenue
Longview, Washington 98632
(206) 577-7222

___ _____

_____

_____

6. Analyses Required: TCLP: 8081, 8240, 8150, Metals RCRA-8, TPH-G, TPH-D, 418.1 mod, PH 9040, Flashpt 1010

7. Chain of Custody Submitted; (Yes) No

8. Purchase Order Number: 401528

9. Cost (or estimate): _____

10. Results Received On: _____

11. Additional Notes; _____

_____

_____

TJR 15 Nov 91
TJR 1 Jul 94 Revised

LOG SHEET

SAMPLES SENT TO OUTSIDE LABORATORY

1. Facilities Operations # (Year - #): 96-600

2. Date/Time of Sample: 9-26-96 / 0840

3. Name of Sampler: Dianne Mullan, Matt Schmidlin

4. Sample Description: Soil dropbox: #~~63~~ 64 - trench east of WWTP

5. Sent To: ✓ North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

___ Wacker's Analytical Laboratory

___ Columbia Analytical Services, Incorporated
1152 3rd Avenue
Longview, Washington 98632
(206) 577-7222

___ _____

_____

_____

6. Analyses Required: TCLP: 8081, 8240, 8150, metals RCRA-8, TPH-G
TPH-D, 418.1 mod, pH 9040, Flash pt. 1010

7. Chain of Custody Submitted; (Yes) No

8. Purchase Order Number: 401528

9. Cost (or estimate): _____

10. Results Received On: _____

11. Additional Notes; _____

_____

_____

TJR 15 Nov 91
TJR 1 Jul 94 Revised

LOG SHEET

SAMPLES SENT TO OUTSIDE LABORATORY

1. Facilities Operations # (Year - #): 96-601

2. Date/Time of Sample: 11-04-96 / 0915

3. Name of Sampler: Dianne Mullen, Eric Spiering

4. Sample Description: Drop Box-#64 - trench east of WWTP

5. Sent To: X North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

___ Wacker's Analytical Laboratory

___ Columbia Analytical Services, Incorporated
1152 3rd Avenue
Longview, Washington 98632
(206) 577-7222

___

6. Analyses Required: 2 CLP-8240

7. Chain of Custody Submitted; (Yes) No

8. Purchase Order Number: 401528

9. Cost (or estimate): _____

10. Results Received On: _____

11. Additional Notes; _____

TJR 15 Nov 91
TJR 1 Jul 94 Revised

LOG SHEET

SAMPLES SENT TO OUTSIDE LABORATORY

1. Facilities Operations # (Year - #): 96-602

2. Date/Time of Sample: 11.15.96 / 0845

3. Name of Sampler: Dianne Mullan, Eric Spiering

4. Sample Description: Drop Box - 61

5. Sent To: X North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

___ Wacker's Analytical Laboratory

___ Columbia Analytical Services, Incorporated
1152 3rd Avenue
Longview, Washington 98632
(206) 577-7222

___

6. Analyses Required: PCB, 8240 - complete

7. Chain of Custody Submitted; (Yes) No

8. Purchase Order Number: 401528

9. Cost (or estimate): _____

10. Results Received On: _____

11. Additional Notes; _____

TJR 15 Nov 91
TJR 1 Jul 94 Revised

LOG SHEET

SAMPLES SENT TO OUTSIDE LABORATORY

1. Facilities Operations # (Year - #): 96-603

2. Date/Time of Sample: 11-15-96 / 0850

3. Name of Sampler: Dianne Mullan, Eric Spiering

4. Sample Description: Drop Box 62

5. Sent To: X North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

___ Wacker's Analytical Laboratory

___ Columbia Analytical Services, Incorporated
1152 3rd Avenue
Longview, Washington 98632
(206) 577-7222

___ _____

6. Analyses Required: PCB, 8240 complete

7. Chain of Custody Submitted; (Yes) No

8. Purchase Order Number: 401528

9. Cost (or estimate): _____

10. Results Received On: _____

11. Additional Notes; _____

TJR 15 Nov 91
TJR 1 Jul 94 Revised

LOG SHEET

SAMPLES SENT TO OUTSIDE LABORATORY

1. Facilities Operations # (Year - #): 96-604

2. Date/Time of Sample: 11-15-96 / 0855

3. Name of Sampler: Dianne Mullan, Eric Spiering

4. Sample Description: Drop Box - 63

5. Sent To: X North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

___ Wacker's Analytical Laboratory

___ Columbia Analytical Services, Incorporated
1152 3rd Avenue
Longview, Washington 98632
(206) 577-7222

___

6. Analyses Required: PCB, 8240 complete

7. Chain of Custody Submitted; (Yes) No

8. Purchase Order Number: 401528

9. Cost (or estimate): _____

10. Results Received On: _____

11. Additional Notes; _____

TJR 15 Nov 91
TJR 1 Jul 94 Revised

LOG SHEET

SAMPLES SENT TO OUTSIDE LABORATORY

1. Facilities Operations # (Year - #): 96-605

2. Date/Time of Sample: 11-15-96 / 0900

3. Name of Sampler: Dianne Mullan, Eric Spiering

4. Sample Description: Drop Box 64

5. Sent To: X North Creek Analytical
(formerly Pacific Environmental Laboratory, Inc.)
9405 SW Nimbus Avenue
Beaverton, Oregon 97005
643-9200

___ Wacker's Analytical Laboratory

___ Columbia Analytical Services, Incorporated
1152 3rd Avenue
Longview, Washington 98632
(206) 577-7222

___

6. Analyses Required: PCB, 8240

7. Chain of Custody Submitted; (Yes) No

8. Purchase Order Number: 401528

9. Cost (or estimate): _____

10. Results Received On: _____

11. Additional Notes; _____

TJR 15 Nov 91
TJR 1 Jul 94 Revised

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SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

Wacker Siltronics Corporation	Project:	Soil	Sampled:	11/15/96
7200 N.W. Front	Project Number:	Box-61-64	Received:	11/15/96
Portland, OR 97210	Project Manager:	Dianne Mullan	Reported:	11/25/96 15:13

ANALYTICAL REPORT FOR SAMPLES:

Sample Description	Laboratory Sample Number	Sample Matrix	Date Sampled
96-602	P611241-01	Soil	11/15/96
96-603	P611241-02	Soil	11/15/96
96-604	P611241-03	Soil	11/15/96
96-605	P611241-04	Soil	11/15/96

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Wacker Siltronics Corporation	Project:	Soil	Sampled:	11/15/96
7200 N.W. Front	Project Number:	Box-61-64	Received:	11/15/96
Portland, OR 97210	Project Manager:	Dianne Mullan	Reported:	11/25/96 15:13

Polychlorinated Biphenyls per EPA Method 8081
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
96-602			**P611241-01**				**Soil**	
Aroclor 1016	1160226	11/18/96	11/19/96		50.0	ND	ug/kg dry	
Aroclor 1221	"	"	"		400	ND	"	1
Aroclor 1232	"	"	"		50.0	ND	"	
Aroclor 1242	"	"	"		50.0	ND	"	
Aroclor 1248	"	"	"		50.0	ND	"	
Aroclor 1254	"	"	"		50.0	ND	"	
Aroclor 1260	"	"	"		70.0	ND	"	1
Surrogate: 2,4,5,6-Tetrachloro-m-xylene	"	"	"	*74.0-129*		*61.3*	*%*	*2*
Surrogate: Decachlorobiphenyl	"	"	"	*66.0-142*		*79.4*	"	
96-603			**P611241-02**				**Soil**	
Aroclor 1016	1160226	11/18/96	11/19/96		50.0	ND	ug/kg dry	
Aroclor 1221	"	"	"		200	ND	"	1
Aroclor 1232	"	"	"		50.0	ND	"	
Aroclor 1242	"	"	"		60.0	ND	"	1
Aroclor 1248	"	"	"		50.0	ND	"	
Aroclor 1254	"	"	"		50.0	ND	"	
Aroclor 1260	"	"	"		50.0	ND	"	
Surrogate: 2,4,5,6-Tetrachloro-m-xylene	"	"	"	*74.0-129*		*67.1*	*%*	*2*
Surrogate: Decachlorobiphenyl	"	"	"	*66.0-142*		*87.4*	"	
96-604			**P611241-03**				**Soil**	
Aroclor 1016	1160226	11/18/96	11/19/96		50.0	ND	ug/kg dry	
Aroclor 1221	"	"	"		50.0	ND	"	
Aroclor 1232	"	"	"		50.0	ND	"	
Aroclor 1242	"	"	"		50.0	**366**	"	
Aroclor 1248	"	"	"		50.0	ND	"	
Aroclor 1254	"	"	"		50.0	ND	"	3
Aroclor 1260	"	"	"		50.0	**384**	"	
Surrogate: 2,4,5,6-Tetrachloro-m-xylene	"	"	"	*74.0-129*		*73.8*	*%*	*2*
Surrogate: Decachlorobiphenyl	"	"	"	*66.0-142*		*96.7*	"	
96-605			**P611241-04**				**Soil**	
Aroclor 1016	1160226	11/18/96	11/19/96		50.0	ND	ug/kg dry	
Aroclor 1221	"	"	"		50.0	ND	"	
Aroclor 1232	"	"	"		50.0	ND	"	
Aroclor 1242	"	"	"		50.0	**281**	"	
Aroclor 1248	"	"	"		50.0	ND	"	

North Creek Analytical, Inc.

**Refer to end of report for text of notes and definitions.*

Joy Chang, Project Manager

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Wacker Siltronics Corporation	Project:	Soil	Sampled:	11/15/96
7200 N.W. Front	Project Number:	Box-61-64	Received:	11/15/96
Portland, OR 97210	Project Manager:	Dianne Mullan	Reported:	11/25/96 15:13

Polychlorinated Biphenyls per EPA Method 8081
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
96-605 (continued)			**P611241-04**				**Soil**	
Aroclor 1254	1160226	11/18/96	11/19/96		50.0	ND	ug/kg dry	3
Aroclor 1260	"	"	"		50.0	**641**	"	
Surrogate: 2,4,5,6-Tetrachloro-m-xylene	"	"	"	*74.0-129*		*74.2*	*%*	
Surrogate: Decachlorobiphenyl	"	"	"	*66.0-142*		*97.9*	"	

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Wacker Siltronics Corporation	Project:	Soil	Sampled:	11/15/96
7200 N.W. Front	Project Number:	Box-61-64	Received:	11/15/96
Portland, OR 97210	Project Manager:	Dianne Mullan	Reported:	11/25/96 15:13

TCLP Volatile Organic Compounds per EPA Method 1311/8260
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
96-602			**P611241-01**				**Soil**	
Benzene	1160343	11/18/96	11/21/96		0.500	ND	mg/l	
Carbon tetrachloride	"	"	"		0.500	ND	"	
Chlorobenzene	"	"	"		0.500	ND	"	
Chloroform	"	"	"		0.500	ND	"	
1,4-Dichlorobenzene	"	"	"		0.500	ND	"	
1,2-Dichloroethane	"	"	"		0.500	ND	"	
1,1-Dichloroethene	"	"	"		0.500	ND	"	
Methyl ethyl ketone	"	"	"		6.25	ND	"	
Tetrachloroethene	"	"	"		0.500	ND	"	
Trichloroethene	"	"	"		0.500	ND	"	
Vinyl chloride	"	"	"		0.500	ND	"	
Surrogate: 4-BFB	"	"	"	*74.0-121*		*100*	*%*	
Surrogate: Dibromofluoromethane	"	"	"	*80.0-121*		*99.0*	"	
Surrogate: Toluene-d8	"	"	"	*81.0-117*		*100*	"	
96-603			**P611241-02**				**Soil**	
Benzene	1160343	11/20/96	11/21/96		0.0100	ND	mg/l	
Carbon tetrachloride	"	"	"		0.0100	ND	"	
Chlorobenzene	"	"	"		0.0100	ND	"	
Chloroform	"	"	"		0.0100	ND	"	
1,4-Dichlorobenzene	"	"	"		0.0100	ND	"	
1,2-Dichloroethane	"	"	"		0.0100	ND	"	
1,1-Dichloroethene	"	"	"		0.0100	ND	"	
Methyl ethyl ketone	"	"	"		0.125	ND	"	
Tetrachloroethene	"	"	"		0.0100	ND	"	
Trichloroethene	"	"	"		0.0100	ND	"	
Vinyl chloride	"	"	"		0.0100	ND	"	
Surrogate: 4-BFB	"	"	"	*74.0-121*		*99.5*	*%*	
Surrogate: Dibromofluoromethane	"	"	"	*80.0-121*		*101*	"	
Surrogate: Toluene-d8	"	"	"	*81.0-117*		*101*	"	
96-604			**P611241-03**				**Soil**	
Benzene	1160343	11/20/96	11/21/96		0.0200	ND	mg/l	
Carbon tetrachloride	"	"	"		0.0200	ND	"	
Chlorobenzene	"	"	"		0.0200	ND	"	
Chloroform	"	"	"		0.0200	ND	"	
1,4-Dichlorobenzene	"	"	"		0.0200	ND	"	
1,2-Dichloroethane	"	"	"		0.0200	ND	"	

North Creek Analytical, Inc.

**Refer to end of report for text of notes and definitions.*

Joy Chang, Project Manager

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Wacker Siltronics Corporation	Project:	Soil	Sampled:	11/15/96
7200 N.W. Front	Project Number:	Box-61-64	Received:	11/15/96
Portland, OR 97210	Project Manager:	Dianne Mullan	Reported:	11/25/96 15:13

TCLP Volatile Organic Compounds per EPA Method 1311/8260
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
96-604 (continued)			**P611241-03**				**Soil**	
1,1-Dichloroethene	1160343	11/20/96	11/21/96		0.0200	ND	mg/l	
Methyl ethyl ketone	"	"	"		0.250	ND	"	
Tetrachloroethene	"	"	"		0.0200	ND	"	
Trichloroethene	"	"	"		0.0200	ND	"	
Vinyl chloride	"	"	"		0.0200	ND	"	
Surrogate: 4-BFB	"	"	"	*74.0-121*		*99.5*	*%*	
Surrogate: Dibromofluoromethane	"	"	"	*80.0-121*		*104*	"	
Surrogate: Toluene-d8	"	"	"	*81.0-117*		*99.5*	"	
96-605			**P611241-04**				**Soil**	
Benzene	1160343	11/20/96	11/21/96		0.00200	ND	mg/l	
Carbon tetrachloride	"	"	"		0.00200	ND	"	
Chlorobenzene	"	"	"		0.00200	ND	"	
Chloroform	"	"	"		0.00200	ND	"	
1,4-Dichlorobenzene	"	"	"		0.00200	ND	"	
1,2-Dichloroethane	"	"	"		0.00200	ND	"	
1,1-Dichloroethene	"	"	"		0.00200	ND	"	
Methyl ethyl ketone	"	"	"		0.0250	ND	"	
Tetrachloroethene	"	"	"		0.00200	ND	"	
Trichloroethene	"	"	"		0.00200	ND	"	
Vinyl chloride	"	"	"		0.00200	ND	"	
Surrogate: 4-BFB	"	"	"	*74.0-121*		*100*	*%*	
Surrogate: Dibromofluoromethane	"	"	"	*80.0-121*		*103*	"	
Surrogate: Toluene-d8	"	"	"	*81.0-117*		*100*	"	

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Wacker Siltronics Corporation	Project:	Soil	Sampled:	11/15/96
7200 N.W. Front	Project Number:	Box-61-64	Received:	11/15/96
Portland, OR 97210	Project Manager:	Dianne Mullan	Reported:	11/25/96 15:13

Dry Weight Determination
North Creek Analytical - Portland

Sample Name	Lab ID	Matrix	Result	Units
96-602	P611241-01	Soil	91.7	%
96-603	P611241-02	Soil	91.3	%
96-604	P611241-03	Soil	91.1	%
96-605	P611241-04	Soil	86.9	%

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Wacker Siltronics Corporation	Project:	Soil	Sampled:	11/15/96
7200 N.W. Front	Project Number:	Box-61-64	Received:	11/15/96
Portland, OR 97210	Project Manager:	Dianne Mullan	Reported:	11/25/96 15:13

Polychlorinated Biphenyls per EPA Method 8081/Quality Control
North Creek Analytical - Portland

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 1160226	**Date Prepared: 11/18/96**				**Extraction Method: EPA 3550**					
Blank	**1160226-BLK1**									
Aroclor 1016	11/19/96			**ND**	ug/kg dry	**50.0**				
Aroclor 1221	"			**ND**	"	**50.0**				
Aroclor 1232	"			**ND**	"	**50.0**				
Aroclor 1242	"			**ND**	"	**50.0**				
Aroclor 1248	"			**ND**	"	**50.0**				
Aroclor 1254	"			**ND**	"	**50.0**				
Aroclor 1260	"			**ND**	"	**50.0**				
Surrogate: 2,4,5,6-Tetrachloro-m-xylene	"	*33.3*		*24.1*	"	*74.0-129*	*72.4*			
Surrogate: Decachlorobiphenyl	"	*33.3*		*26.4*	"	*66.0-142*	*79.3*			
Blank Spike	**1160226-BS1**									
Aroclor 1016	11/19/96	333		281	ug/kg dry	83.0-130	**84.4**			
Aroclor 1260	"	333		309	"	69.0-140	**92.8**			
Surrogate: 2,4,5,6-Tetrachloro-m-xylene	"	*33.3*		*32.2*	"	*74.0-129*	*96.7*			
Surrogate: Decachlorobiphenyl	"	*33.3*		*33.7*	"	*66.0-142*	*101*			
Matrix Spike	**1160226-MS1**		**P611236-01**							
Aroclor 1016	11/19/96	388	ND	334	ug/kg dry	60.0-149	**86.1**			
Aroclor 1260	"	388	ND	357	"	70.0-137	**92.0**			
Surrogate: 2,4,5,6-Tetrachloro-m-xylene	"	*38.8*		*37.1*	"	*74.0-129*	*95.6*			
Surrogate: Decachlorobiphenyl	"	*38.8*		*40.0*	"	*66.0-142*	*103*			
Matrix Spike Dup	**1160226-MSD1**		**P611236-01**							
Aroclor 1016	11/19/96	388	ND	341	ug/kg dry	60.0-149	**87.9**		**2.07**	
Aroclor 1260	"	388	ND	369	"	70.0-137	**95.1**	50.0	**3.31**	
Surrogate: 2,4,5,6-Tetrachloro-m-xylene	"	*38.8*		*38.0*	"	*74.0-129*	*97.9*			
Surrogate: Decachlorobiphenyl	"	*38.8*		*41.2*	"	*66.0-142*	*106*			

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Joy Chang, Project Manager

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Wacker Siltronics Corporation	Project:	Soil	Sampled:	11/15/96
7200 N.W. Front	Project Number:	Box-61-64	Received:	11/15/96
Portland, OR 97210	Project Manager:	Dianne Mullan	Reported:	11/25/96 15:13

TCLP Volatile Organic Compounds per EPA Method 1311/8260/Quality Control
North Creek Analytical - Portland

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 1160343	**Date Prepared: 11/20/96**				**Extraction Method: EPA 1311/5030**					
Blank	**1160343-BLK1**									
Benzene	11/21/96			**ND**	mg/l	**0.00300**				
Carbon tetrachloride	"			**ND**	"	**0.00200**				
Chlorobenzene	"			**ND**	"	**0.00200**				
Chloroform	"			**ND**	"	**0.00200**				
1,4-Dichlorobenzene	"			**ND**	"	**0.00200**				
1,2-Dichloroethane	"			**ND**	"	**0.00200**				
1,1-Dichloroethene	"			**ND**	"	**0.00200**				
Methyl ethyl ketone	"			**ND**	"	**0.0250**				
Tetrachloroethene	"			**ND**	"	**0.00200**				
Trichloroethene	"			**ND**	"	**0.00200**				
Vinyl chloride	"			**ND**	"	**0.00200**				
Surrogate: 4-BFB	"	*0.0200*		*0.0199*	"	*74.0-121*	*99.5*			
Surrogate: Dibromofluoromethane	"	*0.0200*		*0.0205*	"	*80.0-121*	*103*			
Surrogate: Toluene-d8	"	*0.0200*		*0.0201*	"	*81.0-117*	*100*			
Blank	**1160343-BLK2**									
Benzene	11/21/96			**ND**	mg/l	**0.00200**				
Carbon tetrachloride	"			**ND**	"	**0.00200**				
Chlorobenzene	"			**ND**	"	**0.00200**				
Chloroform	"			**ND**	"	**0.00200**				
1,4-Dichlorobenzene	"			**ND**	"	**0.00200**				
1,2-Dichloroethane	"			**ND**	"	**0.00200**				
1,1-Dichloroethene	"			**ND**	"	**0.00200**				
Methyl ethyl ketone	"			**ND**	"	**0.0250**				
Tetrachloroethene	"			**ND**	"	**0.00200**				
Trichloroethene	"			**ND**	"	**0.00200**				
Vinyl chloride	"			**ND**	"	**0.00200**				
Surrogate: 4-BFB	"	*0.0200*		*0.0196*	"	*74.0-121*	*98.0*			
Surrogate: Dibromofluoromethane	"	*0.0200*		*0.0199*	"	*80.0-121*	*99.5*			
Surrogate: Toluene-d8	"	*0.0200*		*0.0199*	"	*81.0-117*	*99.5*			
Blank Spike	**1160343-BS1**									
Benzene	11/21/96	0.0200		0.0223	mg/l	66.0-142	**111**			
Carbon tetrachloride	"	0.0200		0.0233	"	50.0-150	**117**			
Chlorobenzene	"	0.0200		0.0208	"	60.0-133	**104**			
Chloroform	"	0.0200		0.0220	"	50.0-150	**110**			
1,4-Dichlorobenzene	"	0.0200		0.0198	"	50.0-150	**99.0**			

North Creek Analytical, Inc.

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Joy Chang, Project Manager

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Wacker Siltronics Corporation	Project:	Soil	Sampled:	11/15/96
7200 N.W. Front	Project Number:	Box-61-64	Received:	11/15/96
Portland, OR 97210	Project Manager:	Dianne Mullan	Reported:	11/25/96 15:13

TCLP Volatile Organic Compounds per EPA Method 1311/8260/Quality Control
North Creek Analytical - Portland

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Blank Spike (continued)	**1160343-BS1**									
1,2-Dichloroethane	11/21/96	0.0200		0.0264	mg/l	50.0-150	**132**			
1,1-Dichloroethene	"	0.0200		0.0224	"	59.0-172	**112**			
Methyl ethyl ketone	"	0.0400		0.0531	"	40.0-180	**133**			
Tetrachloroethene	"	0.0200		0.0189	"	50.0-150	**94.5**			
Trichloroethene	"	0.0200		0.0207	"	62.0-137	**104**			
Vinyl chloride	"	0.0200		0.0298	"	40.0-180	**149**			
Surrogate: 4-BFB	*"*	*0.0200*		*0.0195*	*"*	*74.0-121*	*97.5*			
Surrogate: Dibromofluoromethane	*"*	*0.0200*		*0.0199*	*"*	*80.0-121*	*99.5*			
Surrogate: Toluene-d8	*"*	*0.0200*		*0.0199*	*"*	*81.0-117*	*99.5*			
Matrix Spike	**1160343-MS1**		**P611241-04**							
Benzene	11/21/96	0.0200	ND	0.0210	mg/l	66.0-142	**105**			
Carbon tetrachloride	"	0.0200	ND	0.0233	"	50.0-150	**117**			
Chlorobenzene	"	0.0200	ND	0.0199	"	60.0-133	**99.5**			
Chloroform	"	0.0200	ND	0.0214	"	50.0-150	**107**			
1,4-Dichlorobenzene	"	0.0200	ND	0.0191	"	50.0-150	**95.5**			
1,2-Dichloroethane	"	0.0200	ND	0.0259	"	50.0-150	**130**			
1,1-Dichloroethene	"	0.0200	ND	0.0220	"	59.0-172	**110**			
Methyl ethyl ketone	"	0.0400	ND	0.0509	"	40.0-180	**127**			
Tetrachloroethene	"	0.0200	ND	0.0181	"	50.0-150	**90.5**			
Trichloroethene	"	0.0200	ND	0.0196	"	62.0-137	**98.0**			
Vinyl chloride	"	0.0200	ND	0.0287	"	40.0-180	**144**			
Surrogate: 4-BFB	*"*	*0.0200*		*0.0195*	*"*	*74.0-121*	*97.5*			
Surrogate: Dibromofluoromethane	*"*	*0.0200*		*0.0205*	*"*	*80.0-121*	*103*			
Surrogate: Toluene-d8	*"*	*0.0200*		*0.0201*	*"*	*81.0-117*	*100*			
Matrix Spike Dup	**1160343-MSD1**		**P611241-04**							
Benzene	11/21/96	0.0200	ND	0.0216	mg/l	66.0-142	**108**	21.0	**2.82**	
Carbon tetrachloride	"	0.0200	ND	0.0237	"	50.0-150	**119**	40.0	**1.69**	
Chlorobenzene	"	0.0200	ND	0.0202	"	60.0-133	**101**	21.0	**1.50**	
Chloroform	"	0.0200	ND	0.0218	"	50.0-150	**109**	40.0	**1.85**	
1,4-Dichlorobenzene	"	0.0200	ND	0.0193	"	50.0-150	**96.5**	40.0	**1.04**	
1,2-Dichloroethane	"	0.0200	ND	0.0260	"	50.0-150	**130**	40.0	**0**	
1,1-Dichloroethene	"	0.0200	ND	0.0226	"	59.0-172	**113**	22.0	**2.69**	
Methyl ethyl ketone	"	0.0400	ND	0.0494	"	40.0-180	**124**	50.0	**2.39**	
Tetrachloroethene	"	0.0200	ND	0.0186	"	50.0-150	**93.0**	50.0	**2.72**	
Trichloroethene	"	0.0200	ND	0.0204	"	62.0-137	**102**	24.0	**4.00**	
Vinyl chloride	"	0.0200	ND	0.0293	"	40.0-180	**147**	50.0	**2.06**	

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Wacker Siltronics Corporation	Project:	Soil	Sampled:	11/15/96
7200 N.W. Front	Project Number:	Box-61-64	Received:	11/15/96
Portland, OR 97210	Project Manager:	Dianne Mullan	Reported:	11/25/96 15:13

TCLP Volatile Organic Compounds per EPA Method 1311/8260/Quality Control
North Creek Analytical - Portland

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Matrix Spike Dup (continued)	**1160343-MSD1**		**P611241-04**							
Surrogate: 4-BFB	*11/21/96*	*0.0200*		*0.0194*	*mg/l*	*74.0-121*	*97.0*			
Surrogate: Dibromofluoromethane	*"*	*0.0200*		*0.0205*	*"*	*80.0-121*	*103*			
Surrogate: Toluene-d8	*"*	*0.0200*		*0.0200*	*"*	*81.0-117*	*100*			

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Wacker Siltronics Corporation	Project:	Soil	Sampled:	11/15/96
7200 N.W. Front	Project Number:	Box-61-64	Received:	11/15/96
Portland, OR 97210	Project Manager:	Dianne Mullan	Reported:	11/25/96 15:13

Notes and Definitions

#	Note
1	The reporting limit for this analyte was raised due to matrix interference.
2	Surrogate recovery is out of control limits. QA criteria are met when one surrogate is within control limits.
3	Aroclor 1254 may also be present, quantitated as Aroclor 1260.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
Recov.	Recovery
RPD	Relative Percent Difference

14°

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NORTH CREEK ANALYTICAL
Environmental Laboratory Services

CHAIN OF CUSTODY REPORT

Work Order #

REPORT TO: Wacker Siltronic
ATTENTION: Dianne Mullan
ADDRESS: 7200 N.W. Front Ave
Portland Oregon
PHONE: 243.2020 FAX: 241.7599
PROJECT NAME: Soil
PROJECT NUMBER: Box - 61-64
SAMPLED BY: Dianne Mullan

INVOICE TO: Wacker
ATTENTION:
ADDRESS:
P.O. NUMBER: 401528 NCA QUOTE #:

TURNAROUND REQUEST in Business Days *
Organic & Inorganic Analyses: 10 (Standard) | 7 | 5 | 4 | 3 | 2 | 1 | Same Day
Fuels & Hydrocarbon Analyses: 5 (Standard) | 3 | 2 | 1 | Same Day
OTHER Specify:
* Turnaround Requests less than standard may incur Rush Charges.

Analysis Request: PCB; TCLP # 8240

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	NCA SAMPLE ID (Laboratory Use Only)	PCB	TCLP # 8240	MATRIX (W, S, A, O)	# OF CONTAINERS	COMMENTS
1.	96.602	11.15.96 0845		X	X	S	1	
2.	96.603	11.15.96 0850		X	X	S	1	
3.	96.604	11.15.96 0855		X	X	S	1	
4.	96.605	11.15.96 0900		X	X	S	1	
5.								
6.								
7.								
8.								
9.								
10.								

RELINQUISHED BY (Signature): Dianne Mullan	DATE: 11.15.96	RECEIVED BY (Signature): P. Conroy	DATE: 11-15-96
PRINT NAME: Dianne Mullan	FIRM: Wacker Siltronic TIME:	PRINT NAME: PAUL CONROY	FIRM: WCKR. TIME: 10:30
RELINQUISHED BY (Signature): Paul Conroy	DATE: 11-15-96	RECEIVED BY (Signature): Sara McClurg	DATE: 11-15-96
PRINT NAME: PAUL CONROY	FIRM: WCKR TIME: 1108	PRINT NAME: Sara McClurg	FIRM: NCA TIME: 1110

ADDITIONAL REMARKS: * complete list

PAGE OF

COC Rev 8, 1/96

SCOEPA00019756

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

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November 5, 1996

Wacker Siltronic Corporation
7200 N.W. Front
Portland, OR 97210

Attention: Dianne Mullan

RE: JOB # 61.64
P.O.# 401528
PROJECT - SOIL

Enclosed are test results for your samples received in this lab on Sep. 26, 1996. For your reference, these analyses have been assigned our NCA # P609383.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

This report will be accompanied by a separate Quality Control Data Report, unless omitted by client request.

Please call if you have any questions.

Respectfully,

Joy Chang
Project Manager

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pH per EPA 9045
Results In standard units

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P609383
Matrix: soil
Sampled: 09/26/96
Received: 09/26/96

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
96-597	P609383-1	pH	4.1	0-14	10/04/96	10/04/96
96-598	P609383-2	pH	5.8	0-14	10/04/96	10/04/96
96-599	P609383-3	pH	3.7	0-14	10/04/96	10/04/96
96-600	P609383-4	pH	5.7	0-14	10/04/96	10/04/96

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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TCLP per EPA 1311, 6010, 7470

Results In mg/L (ppm)

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P609383
Matrix: soil
Sampled: 09/26/96
Received: 09/26/96

Client ID	Lab ID	Analyte	Result	MRL	Date Extracted	Date Prepared	Date Analyzed
96-597	P609383-1	Arsenic	ND	0.50	10/01/96	10/03/96	10/03/96
		Barium	ND	0.50			
		Cadmium	ND	0.010			
		Chromium	ND	0.010			
		Lead	ND	0.20			
		Mercury	ND	0.00020			
		Selenium	ND	0.25			
		Silver	ND	0.020			
96-598	P609383-2	Arsenic	ND	0.50	10/01/96	10/03/96	10/03/96
		Barium	ND	0.50			
		Cadmium	ND	0.010			
		Chromium	ND	0.010			
		Lead	ND	0.20			
		Mercury	ND	0.00020			
		Selenium	ND	0.25			
		Silver	ND	0.020			
96-599	P609383-3	Arsenic	ND	0.50	10/01/96	10/03/96	10/03/96
		Barium	ND	0.50			
		Cadmium	0.045	0.010			
		Chromium	ND	0.010			
		Lead	0.72	0.20			
		Mercury	ND	0.00020			
		Selenium	ND	0.25			
		Silver	ND	0.020			
96-600	P609383-4	Arsenic	ND	0.50	10/01/96	10/03/96	10/03/96
		Barium	ND	0.50			
		Cadmium	0.038	0.010			
		Chromium	ND	0.010			
		Lead	0.48	0.20			
		Mercury	ND	0.00020			
		Selenium	ND	0.25			
		Silver	ND	0.020			

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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Flashpoint (PMCC)
Results In degrees F

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P609383
Matrix: soil
Sampled: 09/26/96
Received: 09/26/96

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
96-597	P609383-1	No flash to	150		10/03/96	10/03/96
96-598	P609383-2	No flash to	150		10/03/96	10/03/96
96-599	P609383-3	No flash to	150		10/03/96	10/03/96
96-600	P609383-4	No flash to	150		10/03/96	10/03/96

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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TPH-G per Oregon DEQ (C6-C10)
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P609383
Matrix: soil
Sampled: 09/26/96
Received: 09/26/96

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
96-597	P609383-1	Gasoline/Related	20	2.0	09/30/96	10/04/96
96-598	P609383-2	Gasoline/Related	17	2.0	09/30/96	10/04/96
96-599	P609383-3	Gasoline/Related	20	2.0	09/30/96	10/04/96
96-600	P609383-4	Gasoline/Related	11	2.0	09/30/96	10/04/96

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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TPH-D per Oregon DEQ (C10-C28)

Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P609383
Matrix: soil
Sampled: 09/26/96
Received: 09/26/96

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
96-597	P609383-1	Diesel/Related	1,500 *[1]	250	09/30/96	09/30/96
96-598	P609383-2	Diesel/Related	1,100 *[1]	250	09/30/96	09/30/96
96-599	P609383-3	Diesel/Related	430 *[1]	25	09/30/96	10/01/96
96-600	P609383-4	Diesel/Related	1,400 *[1]	25	09/30/96	09/30/96

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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TPH-418.1M per Oregon DEQ
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P609383
Matrix: soil
Sampled: 09/26/96
Received: 09/26/96

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
96-597	P609383-1	TPH	270	80	10/02/96	10/02/96
96-598	P609383-2	TPH	410	80	10/02/96	10/02/96
96-599	P609383-3	TPH	400	80	10/02/96	10/02/96
96-600	P609383-4	TPH	1200	80	10/02/96	10/02/96

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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TCLP VOC's per EPA 1311, 8240

Results In mg/L (ppm)

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P609383
Matrix: soil
Received: 09/26/96
Sampled: 09/26/96
Extracted: 10/02/96
Prepared: 10/14/96
Analyzed: 10/14/96

Client ID	Lab ID	Analyte	Result	MRL
96-597	P609383-1	Benzene	ND	0.0030
		Carbon Tetrachloride	ND	0.0020
		Chlorobenzene	ND	0.0020
		Chloroform	ND	0.0020
		1,4-Dichlorobenzene	ND	0.0020
		1,2-Dichloroethane	ND	0.0020
		1,1-Dichloroethene	ND	0.0020
		Methyl Ethyl Ketone	ND	0.075
		Tetrachloroethene	ND	0.0020
		Trichloroethene	ND	0.0020
		Vinyl Chloride	ND	0.0050

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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TCLP VOC's per EPA 1311, 8240

Results In mg/L (ppm)

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P609383
Matrix: soil
Received: 09/26/96
Sampled: 09/26/96
Extracted: 10/07/96
Prepared: 10/14/96
Analyzed: 10/14/96

Client ID	Lab ID	Analyte	Result	MRL
96-598	P609383-2	Benzene	ND	0.0030
		Carbon Tetrachloride	ND	0.0020
		Chlorobenzene	ND	0.0020
		Chloroform	ND	0.0020
		1,4-Dichlorobenzene	ND	0.0020
		1,2-Dichloroethane	ND	0.0020
		1,1-Dichloroethene	ND	0.0020
		Methyl Ethyl Ketone	ND	0.075
		Tetrachloroethene	ND	0.0020
		Trichloroethene	ND	0.0020
		Vinyl Chloride	ND	0.0050

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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TCLP VOC's per EPA 1311, 8240

Results In mg/L (ppm)

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P609383
Matrix: soil
Received: 09/26/96
Sampled: 09/26/96
Extracted: 10/07/96
Prepared: 10/14/96
Analyzed: 10/14/96

Client ID	Lab ID	Analyte	Result	MRL
96-599	P609383-3	Benzene	ND	0.0030
		Carbon Tetrachloride	ND	0.0020
		Chlorobenzene	ND	0.0020
		Chloroform	ND	0.0020
		1,4-Dichlorobenzene	ND	0.0020
		1,2-Dichloroethane	ND	0.0020
		1,1-Dichloroethene	ND	0.0020
		Methyl Ethyl Ketone	ND	0.075
		Tetrachloroethene	ND	0.0020
		Trichloroethene	ND	0.0020
		Vinyl Chloride	ND	0.0050

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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TCLP VOC's per EPA 1311, 8240

Results In mg/L (ppm)

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P609383
Matrix: soil
Received: 09/26/96
Sampled: 09/26/96
Extracted: 10/07/96
Prepared: 10/14/96
Analyzed: 10/14/96

Client ID	Lab ID	Analyte	Result	MRL
96-600 *2	P609383-4	Benzene	55	0.0060
		Carbon Tetrachloride	ND	0.0040
		Chlorobenzene	ND	0.0040
		Chloroform	ND	0.0040
		1,4-Dichlorobenzene	ND	0.0040
		1,2-Dichloroethane	ND	0.0040
		1,1-Dichloroethene	ND	0.0040
		Methyl Ethyl Ketone	ND	0.15
		Tetrachloroethene	ND	0.0040
		Trichloroethene	ND	0.0040
		Vinyl Chloride	ND	0.010

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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TCLP BNAs per EPA 1311, 8270

Results In mg/L (ppm)

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P609383
Matrix: soil
Sampled: 09/26/96
Received: 09/26/96
Extracted: 10/10/96

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
96-597	P609383-1	Cresols(total)	ND	0.050	10/17/96	11/01/96
		1,4-Dichlorobenzene	ND	0.050		
		2,4-Dinitrotoluene	ND	0.050		
		Hexachloro-1,3-butadiene	ND	0.050		
		Hexachlorobenzene	ND	0.050		
		Hexachloroethane	ND	0.050		
		Nitrobenzene	ND	0.050		
		Pentachlorophenol	ND	0.10		
		Pyridine	ND	0.20		
		2,4,5-Trichlorophenol	ND	0.050		
		2,4,6-Trichlorophenol	ND	0.050		
96-598	P609383-2	Cresols(total)	ND	0.050	10/17/96	11/01/96
		1,4-Dichlorobenzene	ND	0.050		
		2,4-Dinitrotoluene	ND	0.050		
		Hexachloro-1,3-butadiene	ND	0.050		
		Hexachlorobenzene	ND	0.050		
		Hexachloroethane	ND	0.050		
		Nitrobenzene	ND	0.050		
		Pentachlorophenol	ND	0.10		
		Pyridine	ND	0.20		
		2,4,5-Trichlorophenol	ND	0.050		
		2,4,6-Trichlorophenol	ND	0.050		
96-599	P609383-3	Cresols(total)	ND	0.050	10/17/96	11/01/96
		1,4-Dichlorobenzene	ND	0.050		
		2,4-Dinitrotoluene	ND	0.050		
		Hexachloro-1,3-butadiene	ND	0.050		
		Hexachlorobenzene	ND	0.050		
		Hexachloroethane	ND	0.050		
		Nitrobenzene	ND	0.050		
		Pentachlorophenol	ND	0.10		
		Pyridine	ND	0.20		
		2,4,5-Trichlorophenol	ND	0.050		
		2,4,6-Trichlorophenol	ND	0.050		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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TCLP BNAs per EPA 1311, 8270

Results In mg/L (ppm)

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P609383
Matrix: soil
Sampled: 09/26/96
Received: 09/26/96
Extracted: 10/10/96

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
96-600	P609383-4	Cresols(total)	ND	0.050	10/17/96	11/01/96
		1,4-Dichlorobenzene	ND	0.050		
		2,4-Dinitrotoluene	ND	0.050		
		Hexachloro-1,3-butadiene	ND	0.050		
		Hexachlorobenzene	ND	0.050		
		Hexachloroethane	ND	0.050		
		Nitrobenzene	ND	0.050		
		Pentachlorophenol	ND	0.10		
		Pyridine	ND	0.20		
		2,4,5-Trichlorophenol	ND	0.050		
		2,4,6-Trichlorophenol	ND	0.050		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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TCLP Pesticides per EPA 1311, 8080

Results In mg/L (ppm)

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P609383
Matrix: soil
Sampled: 09/26/96
Received: 09/26/96
Extracted: 10/01/96

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
96-597	P609383-1	Chlordane	ND	0.020	10/09/96	10/10/96
		Endrin	ND	0.00040		
		Heptachlor	ND	0.00040		
		Heptachlor Epoxide	ND	0.00040		
		Lindane	ND	0.00040		
		Methoxychlor	ND	0.00040		
		Toxaphene	ND	0.020		
96-598	P609383-2	Chlordane	ND	0.020	10/09/96	10/10/96
		Endrin	ND	0.00040		
		Heptachlor	ND	0.00040		
		Heptachlor Epoxide	ND	0.00040		
		Lindane	ND	0.00040		
		Methoxychlor	ND	0.00040		
		Toxaphene	ND	0.020		
96-599	P609383-3	Chlordane	ND	0.020	10/09/96	10/10/96
		Endrin	ND	0.00040		
		Heptachlor	ND	0.00040		
		Heptachlor Epoxide	ND	0.00040		
		Lindane	ND	0.00040		
		Methoxychlor	ND	0.00040		
		Toxaphene	ND	0.020		
96-600	P609383-4	Chlordane	ND	0.020	10/09/96	10/10/96
		Endrin	ND	0.00040		
		Heptachlor	ND	0.00040		
		Heptachlor Epoxide	ND	0.00040		
		Lindane	ND	0.00040		
		Methoxychlor	ND	0.00040		
		Toxaphene	ND	0.020		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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TCLP Herbicides per EPA 1311, 8151

Results In mg/L (ppm)

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P609383
Matrix: soil
Sampled: 09/26/96
Received: 09/26/96

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
96-597	P609383-1	2,4-D	ND	0.010	10/08/96	10/15/96
		2,4,5-TP (Silvex)	ND	0.010		
96-598	P609383-2	2,4-D	ND	0.010	10/08/96	10/15/96
		2,4,5-TP (Silvex)	ND	0.010		
96-599	P609383-3	2,4-D	ND	0.010	10/08/96	10/15/96
		2,4,5-TP (Silvex)	ND	0.010		
96-600	P609383-4	2,4-D	ND	0.010	10/08/96	10/15/96
		2,4,5-TP (Silvex)	ND	0.010		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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SURROGATE RECOVERIES (%)

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Number: P609383
Received: 09/26/1996

Sample Name	Analyte	Result	Control Limits
TPH-G per Oregon DEQ (C6-C10)			
96-597	4-Bromofluorobenzene	98	63-126
	Trifluorotoluene	79	50-150
96-598	4-Bromofluorobenzene	96	63-126
	Trifluorotoluene	77	50-150
96-599	4-Bromofluorobenzene	98	63-126
	Trifluorotoluene	79	50-150
96-600	4-Bromofluorobenzene	91	63-126
	Trifluorotoluene	70	50-150
TPH-D per Oregon DEQ (C10-C28)			
96-597	1-Chlorooctadecane	-- *3	50-150
96-598	1-Chlorooctadecane	-- *3	50-150
96-599	1-Chlorooctadecane	-- *3	50-150
96-600	1-Chlorooctadecane	-- *3	50-150

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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SURROGATE RECOVERIES (%)

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Number: P609383
Received: 09/26/1996

Sample Name	Analyte	Result	Control Limits
TCLP VOC's per EPA 1311, 8240			
96-597	4-Bromofluorobenzene	98	74-121
	Dibromofluoromethane	97	80-120
	Toluene-d8	98	81-117
96-598	4-Bromofluorobenzene	98	74-121
	Dibromofluoromethane	94	80-120
	Toluene-d8	98	81-117
96-599	4-Bromofluorobenzene	97	74-121
	Dibromofluoromethane	95	80-120
	Toluene-d8	99	81-117
96-600	4-Bromofluorobenzene	96	74-121
	Dibromofluoromethane	94	80-120
	Toluene-d8	99	81-117

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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SURROGATE RECOVERIES (%)

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Number: P609383
Received: 09/26/1996

Sample Name	Analyte	Result	Control Limits
TCLP BNAs per EPA 1311, 8270			
96-597	2-Fluorobiphenyl	88	43-116
	2-Fluorophenol	69	21-100
	Nitrobenzene-d5	68	35-114
	Phenol-d6	64	10-94
	p-Terphenyl-d14	108	33-141
	2,4,6-Tribromophenol	48	10-123
96-598	2-Fluorobiphenyl	89	43-116
	2-Fluorophenol	72	21-100
	Nitrobenzene-d5	72	35-114
	Phenol-d6	60	10-94
	p-Terphenyl-d14	102	33-141
	2,4,6-Tribromophenol	63	10-123
96-599	2-Fluorobiphenyl	90	43-116
	2-Fluorophenol	63	21-100
	Nitrobenzene-d5	69	35-114
	Phenol-d6	63	10-94
	p-Terphenyl-d14	110	33-141
	2,4,6-Tribromophenol	49	10-123
96-600	2-Fluorobiphenyl	80	43-116
	2-Fluorophenol	69	21-100
	Nitrobenzene-d5	66	35-114
	Phenol-d6	61	10-94
	p-Terphenyl-d14	140	33-141
	2,4,6-Tribromophenol	41	10-123

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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SURROGATE RECOVERIES (%)

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Number: P609383
Received: 09/26/1996

Sample Name	Analyte	Result	Control Limits
TCLP Pesticides per EPA 1311, 8080			
96-597	Decachlorobiphenyl	119	65-130
	2,4,5,6-Tetrachloro-m-xylene	93	65-130
96-598	Decachlorobiphenyl	108	65-130
	2,4,5,6-Tetrachloro-m-xylene	90	65-130
96-599	Decachlorobiphenyl	109	65-130
	2,4,5,6-Tetrachloro-m-xylene	94	65-130
96-600	Decachlorobiphenyl	107	65-130
	2,4,5,6-Tetrachloro-m-xylene	89	65-130
TCLP Herbicides per EPA 1311, 8150			
96-597	2,4-Dichlorophenyl acetic acid	64	24-135
96-598	2,4-Dichlorophenyl acetic acid	55	24-135
96-599	2,4-Dichlorophenyl acetic acid	58	24-135
96-600	2,4-Dichlorophenyl acetic acid	53	24-135

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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COMMENTS

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Number: P609383
Received: 09/26/1996

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1. Pattern and range not consistent with diesel.

2. Reporting limit is raised due to high hydrocarbon concentration.

3. Unable to calculate surrogate recovery due to matrix interference.

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November 5, 1996

Wacker Siltronic Corporation
7200 N.W. Front
Portland, OR 97210

Attention: Dianne Mullan

Re: Quality Control Data
JOB # 61.64
P.O.# 401528
PROJECT - SOIL

NCA project number P609383.

Note: Surrogate Recoveries are included in the final report.

QUALITY CONTROL DEFINITIONS

METHOD BLANK RESULTS

The method blank is an analyte-free matrix which is carried through the same analytical process as the samples. It is used to document contamination that may result from the analytical process.

SURROGATE STANDARD

A surrogate standard (i.e., a chemical compound not expected to occur in an environmental sample) is added to each sample, blank, and matrix spike sample just prior to extraction or processing. The recovery of the surrogate standard is used to monitor for unusual matrix effects, gross sample processing errors, etc. Surrogate recovery is evaluated for acceptance by determining whether the measured concentration falls within accepted limits.

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Accuracy is measured by percent recovery as in:

$$\% \text{ Recovery} = \frac{\text{(Measured Concentration)}}{\text{(Actual Concentration)}} \times 100$$

Precision is measured using duplicate tests by relative percent difference.

$$\text{RPD} = \frac{\text{(Result of Test 1 - Result of Test 2)}}{\text{(Result of Test 1 + Result of Test 2)/2}} \times 100$$

If you should have any questions concerning this report, please contact me.

Sincerely,

Joy Chang
Project Manager

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BATCH QUALITY CONTROL RESULTS
pH per EPA 9045

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P609383
Received: 09/26/96

DUPLICATE
Batch # JK96022a
Results In standard units

Compound	Sample Result	Dup Result
pH	7.20	7.24

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NORTH CREEK ANALYTICAL
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BATCH QUALITY CONTROL RESULTS
TCLP per EPA 1311, 6010, 7470

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P609383
Received: 09/26/96

METHOD BLANK
Batch # KR96103a
Results In mg/L (ppm)

Compound	Result	MRL
Arsenic	ND	0.50
Barium	ND	0.50
Cadmium	ND	0.010
Chromium	ND	0.010
Lead	ND	0.20
Selenium	ND	0.25
Silver	ND	0.020
Date Extracted	10/01/96	
Date Prepared	10/03/96	
Date Analyzed	10/03/96	

MATRIX SPIKE
Batch # KR96103a **Spike ID P609383-1**
Results In mg/L (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS % Rec	QC Limit % Rec
Arsenic	5.0	ND	5.23	105	50-150
Barium	10	ND	9.03	90	50-150
Cadmium	1.0	ND	0.988	99	50-150
Chromium	5.0	ND	4.84	97	50-150
Lead	5.0	ND	4.79	96	50-150
Selenium	1.0	ND	0.889	89	50-150
Silver	2.0	ND	1.76	88	50-150

NORTH CREEK ANALYTICAL
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BATCH QUALITY CONTROL RESULTS
TCLP per EPA 1311, 6010, 7470

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P609383
Received: 09/26/96

LABORATORY CONTROL SAMPLE
Batch # KR96103a
Results in mg/L (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Arsenic	5.0	5.25	105	78-115
Barium	10	9.13	91	74-111
Cadmium	1.0	1.01	101	85-106
Chromium	5.0	5.05	101	80-104
Lead	5.0	4.97	99	83-109
Selenium	1.0	1.07	107	73-121
Silver	2.0	1.87	94	79-108

NORTH CREEK ANALYTICAL
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BATCH QUALITY CONTROL RESULTS
TCLP per EPA 1311, 6010, 7470

Client: Wacker Siltronic Corporation
Project: SOIL
NCA Project #: P609383
Received: 09/26/96

METHOD BLANK
Batch # ZT96138a
Results In mg/L (ppm)

Compound	Result	MRL
Mercury	ND	0.00020
Date Extracted	10/02/96	
Date Prepared	10/02/96	
Date Analyzed	10/03/96	

MATRIX SPIKE
Batch # ZT96138b **Spike ID P609355-1**
Results In mg/L (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS % Rec	QC Limit % Rec
Mercury	0.0050	ND	0.0051	102	50-150

LABORATORY CONTROL SAMPLE
Batch # ZT96138a
Results In mg/L (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Mercury	0.0050	0.0051	102	80-120

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BATCH QUALITY CONTROL RESULTS
Flashpoint (PMCC)

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P609383
Received: 09/26/96

DUPLICATE
Batch # FF96022a
Results In Degrees F

Compound	Sample Result	Dup Result
No Flash to:	150	150

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BATCH QUALITY CONTROL RESULTS
TPH-G per Oregon DEQ (C6-C10)

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P609383
Received: 09/26/96

METHOD BLANK
Batch # BT96080a
Results In mg/kg (ppm)

Compound	Result	MRL
Gasoline/Related	ND	2.0
Date Prepared	09/30/96	
Date Analyzed	10/01/96	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	99	63-126
Trifluorotoluene	79	50-150

DUPLICATE
Batch # BT96080y
Results In mg/kg (ppm)

Duplicate ID P609383-3

Compound	Sample Conc	Dup Conc	RPD	QC Limit RPD
Gasoline	20.2	18.0	12	50

LABORATORY CONTROL SAMPLE
Batch # BT96080a
Results In mg/kg (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Gasoline	31	30	97	50-150

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BATCH QUALITY CONTROL RESULTS
TPH-D per Oregon DEQ (C10-C28)

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P609383
Received: 09/26/96

METHOD BLANK
Batch # FC96042a
Results In mg/kg (ppm)

Compound	Result	MRL
Diesel/Related	ND	25
Date Prepared	09/30/96	
Date Analyzed	09/30/96	

Surrogate Recovery (%)	Result	Control Limit
1-Chlorooctadecane	86	50-150

DUPLICATE
Batch # FC96042z
Results In mg/kg (ppm)

Duplicate ID P609389-11

Compound	Sample Conc	Dup Conc	RPD	QC Limit RPD
Diesel/related (ap)	ND	ND	--	50

(ap) RPD is not reported for sample concentrations less than 5 times the MRL.

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BATCH QUALITY CONTROL RESULTS
TPH-D per Oregon DEQ (C10-C28)

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P609383
Received: 09/26/96

LABORATORY CONTROL SAMPLE
Batch # FC96042a
Results In mg/kg (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Diesel/related	125	136	109	50-150

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BATCH QUALITY CONTROL RESULTS
TPH-418.1M per Oregon DEQ

Client: Wacker Siltronic Corporation
Project: SOIL
NCA Project #: P609383
Received: 09/26/96

METHOD BLANK
Batch # FB96064a
Results In mg/kg (ppm)

Compound	Result	MRL
TPH	ND	20
Date Prepared	10/02/96	
Date Analyzed	10/02/96	

DUPLICATE
Batch # FB96064z **Duplicate ID P609383-4**
Results In mg/kg (ppm)

Compound	Sample Conc	Dup Conc	RPD	QC Limit RPD
TPH	1160	1040	11	50

LABORATORY CONTROL SAMPLE
Batch # FB96064a
Results In mg/kg (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
TPH	125	98.1	78	30-134

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 1311, 8240

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P609383
Received: 09/26/96

METHOD BLANK
Batch # VZ96012a
Results In mg/L (ppm)

Compound	Result	MRL
Benzene	ND	0.0020
Carbon Tetrachloride	ND	0.0020
Chlorobenzene	ND	0.0020
Chloroform	ND	0.0020
1,4-Dichlorobenzene	ND	0.0020
1,2-Dichloroethane	ND	0.0020
1,1-Dichloroethene	ND	0.0020
Methyl Ethyl Ketone	ND	0.025
Tetrachloroethene	ND	0.0020
Trichloroethene	ND	0.0020
Vinyl Chloride	ND	0.0050
Date Extracted	10/02/96	
Date Prepared	10/14/96	
Date Analyzed	10/14/96	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	94	74-121
Dibromofluoromethane	95	80-120
Toluene-d8	98	81-117

NORTH CREEK ANALYTICAL
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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 1311, 8240

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P609383
Received: 09/26/96

METHOD BLANK
Batch # VZ96012b
Results In mg/L (ppm)

Compound	Result	MRL
Benzene	ND	0.0030
Carbon Tetrachloride	ND	0.0020
Chlorobenzene	ND	0.0020
Chloroform	ND	0.0020
1,4-Dichlorobenzene	ND	0.0020
1,2-Dichloroethane	ND	0.0020
1,1-Dichloroethene	ND	0.0020
Methyl Ethyl Ketone	ND	0.075
Tetrachloroethene	ND	0.0020
Trichloroethene	ND	0.0020
Vinyl Chloride	ND	0.0050
Date Extracted	10/07/96	
Date Prepared	10/14/96	
Date Analyzed	10/14/96	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	94	74-121
Dibromofluoromethane	100	80-120
Toluene-d8	97	81-117

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 1311, 8240

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P609383
Received: 09/26/96

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # VZ96012a **Spike ID P609383-2**
Results In mg/L (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS %Rec
Benzene	0.020	ND	0.0205	103
Carbon Tetrachloride	0.020	ND	0.0196	98
Chlorobenzene	0.020	ND	0.0195	98
Chloroform	0.020	ND	0.0184	92
1,4-Dichlorobenzene	0.020	ND	0.0192	96
1,2-Dichloroethane	0.020	ND	0.0196	98
1,1-Dichloroethene	0.020	ND	0.0195	98
Methyl Ethyl Ketone	0.040	ND	0.0442	111
Tetrachloroethene	0.020	ND	0.0188	94
Trichloroethene	0.020	ND	0.0196	98
Vinyl Chloride	0.020	ND	0.0251	126

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
Benzene	0.020	0.0209	105	1.9	21	66-142
Carbon Tetrachloride	0.020	0.0204	102	4.0	40	50-150
Chlorobenzene	0.020	0.0199	100	2.0	21	60-133
Chloroform	0.020	0.0188	94	2.2	40	50-150
1,4-Dichlorobenzene	0.020	0.0198	99	3.1	40	50-150
1,2-Dichloroethane	0.020	0.0201	101	3.0	40	50-150
1,1-Dichloroethene	0.020	0.0201	101	3.0	22	59-172
Methyl Ethyl Ketone	0.040	0.0465	116	4.4	50	40-180
Tetrachloroethene	0.020	0.0195	98	4.2	50	50-150
Trichloroethene	0.020	0.0205	103	5.0	24	62-137
Vinyl Chloride	0.020	0.0256	128	1.6	50	40-180

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 1311, 8240

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P609383
Received: 09/26/96

LABORATORY CONTROL SAMPLE
Batch # VZ96012a
Results In mg/L (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Benzene	0.020	0.0204	102	66-142
Carbon Tetrachloride	0.020	0.0195	98	50-150
Chlorobenzene	0.020	0.0194	97	60-133
Chloroform	0.020	0.0185	93	50-150
1,4-Dichlorobenzene	0.020	0.0192	96	50-150
1,2-Dichloroethane	0.020	0.0198	99	50-150
1,1-Dichloroethene	0.020	0.0194	97	59-172
Methyl Ethyl Ketone	0.040	0.0404	101	40-180
Tetrachloroethene	0.020	0.0187	94	50-150
Trichloroethene	0.020	0.0198	99	62-137
Vinyl Chloride	0.020	0.0252	126	40-180

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BATCH QUALITY CONTROL RESULTS
TCLP BNAs per EPA 1311, 8270

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P609383
Received: 09/26/96

METHOD BLANK
Batch # ST96010a
Results In mg/L (ppm)

Compound	Result	MRL
Cresols(total)	ND	0.050
1,4-Dichlorobenzene	ND	0.050
2,4-Dinitrotoluene	ND	0.050
Hexachloro-1,3-butadiene	ND	0.050
Hexachlorobenzene	ND	0.050
Hexachloroethane	ND	0.050
Nitrobenzene	ND	0.050
Pentachlorophenol	ND	0.10
Pyridine	ND	0.20
2,4,5-Trichlorophenol	ND	0.050
2,4,6-Trichlorophenol	ND	0.050
Date Extracted	10/10/96	
Date Prepared	10/17/96	
Date Analyzed	11/01/96	

Surrogate Recovery (%)	Result	Control Limit
2-Fluorobiphenyl	83	43-116
2-Fluorophenol	73	21-100
Nitrobenzene-d5	74	35-114
Phenol-d6	64	10-94
p-Terphenyl-d14	94	33-141
2,4,6-Tribromophenol	50	10-123

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BATCH QUALITY CONTROL RESULTS
TCLP BNAs per EPA 1311, 8270

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P609383
Received: 09/26/96

MATRIX SPIKE
Batch # ST96010a
Results In mg/L (ppm)

Spike ID P609383-1

Compound	Spike Added	Sample Conc	MS Conc	MS % Rec	QC Limit % Rec
Cresols (total)	1.200	ND	0.718	60	20-150
1,4-Dichlorobenzene	0.400	ND	0.209	52	20-150
2,4-Dinitrotoluene	0.400	ND	0.269	67	20-150
Hexachloro-1,3-butadiene	0.400	ND	0.250	63	20-150
Hexachlorobenzene	0.400	ND	0.237	59	20-150
Hexachloroethane	0.400	ND	0.196	49	20-150
Nitrobenzene	0.400	ND	0.252	63	20-150
Pentachlorophenol	0.400	ND	0.234	59	10-150
Pyridine	0.400	ND	0.228	57	D-150
2,4,5-Trichlorophenol	0.400	ND	0.299	75	20-150
2,4,6-Trichlorophenol	0.400	ND	0.253	63	20-150

LABORATORY CONTROL SAMPLE
Batch # ST96010a
Results In mg/L (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Cresols (total)	1.200	0.823	69	20-150
1,4-Dichlorobenzene	0.400	0.289	72	20-150
2,4-Dinitrotoluene	0.400	0.307	77	20-150
Hexachloro-1,3-butadiene	0.400	0.214	54	20-150
Hexachlorobenzene	0.400	0.252	63	20-150
Hexachloroethane	0.400	0.257	64	20-150
Nitrobenzene	0.400	0.284	71	20-150
Pentachlorophenol	0.400	0.184	46	10-150
Pyridine	0.400	0.182	46	D-150
2,4,5-Trichlorophenol	0.400	0.306	77	20-150
2,4,6-Trichlorophenol	0.400	0.254	64	20-150

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BATCH QUALITY CONTROL RESULTS
TCLP Pesticides per EPA 1311, 8080

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P609383
Received: 09/26/96

METHOD BLANK
Batch # TT96006a
Results In mg/L (ppm)

Compound	Result	MRL
Chlordane	ND	0.020
Endrin	ND	0.00040
Heptachlor	ND	0.00040
Heptachlor Epoxide	ND	0.00040
Lindane	ND	0.00040
Methoxychlor	ND	0.00040
Toxaphene	ND	0.020
Date Extracted	10/01/96	
Date Prepared	10/09/96	
Date Analyzed	10/10/96	

Surrogate Recovery (%)	Result	Control Limit
Decachlorobiphenyl	103	65-130
2,4,5,6-Tetrachloro-m-xylene	87	65-130

MATRIX SPIKE
Batch # TT96006a
Results In mg/L (ppm)

Spike ID P609383-4

Compound	Spike Added	Sample Conc	MS Conc	MS % Rec	QC Limit % Rec
Endrin	0.0020	ND	0.0022	110	50-150
Heptachlor	0.0020	ND	0.0019	95	50-150
Heptachlor Epoxide	0.0020	ND	0.0020	100	50-150
Lindane	0.0020	ND	0.0019	95	50-150
Methoxychlor	0.0020	ND	0.0023	115	50-150

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BATCH QUALITY CONTROL RESULTS
TCLP Pesticides per EPA 1311, 8080

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P609383
Received: 09/26/96

LABORATORY CONTROL SAMPLE
Batch # TT96006a
Results In mg/L (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Chlordane	0.020	0.0192	96	50-150
Endrin	0.0020	0.0019	95	30-147
Heptachlor	0.0020	0.0018	90	34-111
Heptachlor Epoxide	0.0020	0.0018	90	50-150
Lindane	0.0020	0.0018	90	32-127
Methoxychlor	0.0020	0.0020	100	50-150

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BATCH QUALITY CONTROL RESULTS
TCLP Herbicides per EPA 1311, 8151

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P609383
Received: 09/26/96

METHOD BLANK
Batch # 1060273a
Results In mg/L (ppm)

Compound	Result	MRL
2,4-D	ND	0.010
2,4,5-TP (Silvex)	ND	0.010
Date Prepared	10/08/96	
Date Analyzed	10/14/96	

Surrogate Recovery (%)	Result	Control Limit
2,4-Dichlorophenyl acetic acid	62	24-135

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # 1060273a **Spike ID B610106-1**
Results In mg/L (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS %Rec
2,4-D	0.0300	ND	0.0231	77
2,4,5-TP (Silvex)	0.0300	ND	0.0255	85

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
2,4-D	0.0300	0.0220	73	5.3	15	34-136
2,4,5-TP (Silvex)	0.0300	0.0230	77	9.9	13	34-123

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BATCH QUALITY CONTROL RESULTS
TCLP Herbicides per EPA 1311, 8151

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Project #: P609383
Received: 09/26/96

LABORATORY CONTROL SAMPLE
Batch # 1060273a
Results In mg/L (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
2,4-D	0.0033	0.0024	73	34-136
2,4,5-TP (Silvex)	0.0033	0.0025	76	34-123

12.0

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NORTH CREEK ANALYTICAL
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CHAIN OF CUSTODY REPORT

Work Order # P609383

REPORT TO: Dianne Mullan (Wacker Siltronic)
ATTENTION:
ADDRESS: 7200 NW Front Ave
Portland, OR
PHONE: 243.2020 FAX: 417-4117
PROJECT NAME: Soil
PROJECT NUMBER: 61.64
SAMPLED BY: Dianne Mullan, Matt Schmidlin

INVOICE TO: Wacker Siltronic
ATTENTION:
ADDRESS: Same
P.O. NUMBER: 401528 NCA QUOTE #:

TURNAROUND REQUEST in Business Days *
Organic & Inorganic Analyses: 10 (Standard) | 7 | 5 | 4 | 3 | 2 | 1 | Same Day
Fuels & Hydrocarbon Analyses: X (Standard) | 3-4 | 2 | 1 | Same Day
OTHER Specify:
* Turnaround Requests less than standard may incur Rush Charges.

Analysis Request:

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	NCA SAMPLE ID (Laboratory Use Only)	TCLP-8081	TCLP-8240	TCLP-8150	TPH-G	TPH-D	418.1 mod.	pH-9040	Flashpoint 1010	TCLP-Metals RCRA-8			MATRIX (W, S, A, O)	# OF CONTAINERS	COMMENTS
1.	96.597	9-26-96/0830		X	X	X	X	X	X	X	X	X			S	1	
2.	96.598	0830		X	X	X	X	X	X	X	X	X			S	1	
3.	96-599	0840		X	X	X	X	X	X	X	X	X			S	1	
4.	96-600	0840		X	X	X	X	X	X	X	X	X			S	1	
5.																	
6.																	
7.																	
8.																	
9.																	
10.																	

RELINQUISHED BY (Signature): Dianne E Mullan	DATE: 9.26.96	RECEIVED BY (Signature): P. Conroy	DATE: 9-26-96
PRINT NAME: Dianne Mullan	FIRM: Wacker Siltronic / TIME: 1005	PRINT NAME: P. Conroy	FIRM: WBKR. / TIME: 9:45
RELINQUISHED BY (Signature): Paul Conroy	DATE: 9/26/96	RECEIVED BY (Signature): Karin Stanley	DATE: 9.26.96
PRINT NAME: PAUL CONROY	FIRM: WBKR. / TIME: 11:06	PRINT NAME: Karin Stanley	FIRM: NCA / TIME: 1106

ADDITIONAL REMARKS:

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